Thoroughly Revised and Libbsted

# **Engineering Mathematics**



Comprehensive Theory with Solved Examples

Including Previous Solved Questions of

GATE (2003-2017) and ESE-Prelims 2017

Name: Apticious of ESE Moins Statistics angineering also concrete



MADE EASY



#### MADE EASY Publications

Copputation of the inflation of  $y \in \mathbb{R}_+$  , which is not first to provide a (y) they be not that in the example of the (y) and (y) is the inflation of the inflation o

## Engineering Mathematics for GATE 2018 and ESE 2018 Prolime

<sup>®</sup> Depyogati by MACE —each top leader a.

Althorization and the control fricing whether they be too bounced as real manner once the constraint of the control from the  $x_1, x_2, \dots, x_n$  where  $(x_1, x_2, \dots, x_n)$  is a substance of the control of the control

nis. JoHan		2300
secund folder		2010
- aind Caltion		21.77
auch IsBaa		2272
The Edition		2012
.azı - Edirlə		2014
Secreta Edition	:	15.4
Djibbi RALWI	:	327.7

Mitthoration : 2017



Made BASY PUBLICATIONS have used the court of focus of widels and providing to a substant before or information by the flux of any inspection of the open open of the court of the MADE BASY PURPLEAR MASS sever to the court substantial of the flux of the court of the court of the flux of the court of the

## Preface

Over the park that in A and GAL Hand Hab retained and exercise the interface of the interface of the interface of members of carry dialast Though rivery canadicate has bothly produceed by, so injective and members in depth knowledge, public quality and great source on that is required to bothless in the park greats.



B. Singlittle 🔝

The Hero Art Bothor Engineering Mathematics for GATE 2018 and East 2018 Prelims. In 30 636 a for your specific and percent the windie book has been \$55.44 bit of 200,000 500 000 to.

These feet desire to serve at the matter that a providing good active of Michael country guestion. Here the  $Q \approx 200$  feet a section for more entire  $Q \approx 200$  feet and  $Q \approx 200$  commute. These the  $Q \approx 200$  feet and  $Q \approx$ 

(i) Suggregate and Chairman and Variaging 10 at 10.(ii) MA 5e ±457 under



#### **9°LLABLS**

#### GATE and 656 frakmit Dell Engineering.

Linear elgebra  $(t,t) \mapsto \frac{1}{2} \Delta (t,t) \phi_t \circ \phi(t,t)$  from a proof to  $\phi_{t,t}$  is first and figures that

Calculate function of any problem is the term of a policy (i.e., the fig.). Here the interpretable is the term of the interpretable is the problem of the

Cichara Differenti espataren 1900 ilerriaria (h. 1981). El partigo particolaren eta espataren 1900 ilerriaria eta espataren 1901 eta espataren 190

From District District (Fig. ), we have the  $q \ge 1000$  to the contract of the

noted by and finish of a mach of once from making discount to all the machines of the set of the se

Man call Colocodes not the exercising any both of district of the resolution of the colors of the co

## CATE and EXC 3. Für. C. Machanical Englacement

Taken Algebra Marian pera lipitang di Albania peramangkan Lipitang. Nganggan

Obtaile random of the end of the particular and effect on the particular and extended the particular and extended

The result equations from the explosion of explosions and explosions as a finite section of the explosion of

Contract Variables in a vig. (a 4.4 m. 19 m.) A sur a la calabata de la calabata

Archard for and Sing Decembers of the others and represent confidence on the Landau research was also distributed and the Single Landau of the Single Confidence of the Single Confidence on the Sin

humantal Marini se sur urba estador el escribir en el estador de estado 41.000 de los que astronos milhor en conser la estador la encuencia el estador de el estador de el estador de e 18. milhor del estador el estador el estador de el est

#### GATE and PAPPLA Into: Checolical Graying Comp.

L consequences that  $(x_1, x_2, \dots, x_n)$  is different that  $(x_1, x_2, \dots, x_n)$ 

China Varione menti i lascia d'Inere o in, publici a conformi menti a copila i del ferme i Varia dell'illia. Valorine estro una copilari delle i la desirate delle espera menti della seria della dell

TO the control of the angle of the control of the control of the product of the control of the c

Compare Verbiller Andrew Comment (and the many of August (and type leaves from the Material Andrew Mark (and the August Andrew Material Andrew

 -current Methods for a list of a facility by a partner for linear difference in the facility of the

. It is block Theory for the form the  $\alpha$  ,  $\beta$  and  $\alpha$  , which is a conjugative two the object of the significant regions of th

And the colors of the color of

#### GATHAM EXE Tighting Cleans the Built review

Universified the first of the Late of the Communication of the group of the Communication of

Obstantian de la la tradere, money est un est la garage, est apercentre la la trappe desperanda la collection de la confirmación. 18. july 1997 est de la collection de la garage desperanda.

to Country coupling in the reset of a larger of a property of the coupling of

Where the first process is a state of the latter of the state of the

Service Godge, Analde Laborat, Princys man, Tago an Malina 1992 kina a Lida yang properties (K. 1984) kina.

Without the translation of the property of the large region of the large region of the property of the contract of the contra

Protection of equity, then, now movement and property of the protection of the prote

## SATE: Minuscription Engineering

denote by selective the  $(a_1, a_2, \dots, a_n)$  and the  $a_n$  participation of  $(a_1, \dots, a_n)$  . We use that

Capture. Very value of each of the control of the property of the control of the

Define the distribution of the control of the contr

One yell of moreover over the plant parkets for the contract of the plant between the property of the following particles of the plant of the plant

Completely in the Argulia, and passing the magnetic many  $\mu_{AB}$  . Differently, it and the conference of the magnetic many  $(A_{BB},A_{BB},A_{BB})$ 

Instablish and Guilland and purple to the street of a large parties of the street of t

to one of wedget, a basic modes of surface of the property of the contract of the property of the contract of

#### GATE Company with your TEmployments

Litter Regions (1997)et al constitue (2015) a light e princ Siemble (1915) et al constitue (2015)

On the last the contribution of the region ( ), where  $\alpha=-\infty$  , where  $\alpha$ 

to a write the form of this continuous range is supported to the third than the support and the property of a particular to the continuous and a particular the support of the support of

# **∢**≪ Contents

1_	Linear	Algebra	1-/2
			'
		elgel und Vairices	••••
		Dallen-Trang	<del>.</del>
		Impagation Matrix	'*
		-a	1
		Providence of Risk and Dimonston	
		Aystermed Bevot ons	
		Egg values and tigetives on	
		P. 1910-15 (API). In APPAR Quantitation	'5
<b>3</b> _		lus73	
	2."	J <sup>-1</sup> t	:: 
	ā.ē	Committy	75
	2.3	Differe . unity	76
	, 4	Musi d'allie Théorems :	7Y
	25	Computing the Dense Me	'el 1
	1.6	for the office with Garages	
	2.7	-Set a Derivation:	
	<i>3</i> -	Total Durivatives	\ <u>\</u>
	J. J	Missimpland Minima of Limition of Two Independent Venalds statements.	
	2 10	Theorems of integral of dualistic control cont	.M
	2.11		'l-
	2.15	Application collinear stien	!
	1. 3	Walfigle Procytobiand Commeppie of one access to the comment of th	le·
	14	VICED 5	.ع
		Appropriate and PSS Ductions	114
9.		rential Equation*27	'U-26' 
	3.1	official and the second of the	
	1.2	Thireenia Epictons of Fra Diversions	· . ••
	• •	Two Other Methods of Figure 8.	1.7
	3.4	Locations (Jeducible value) and Equation with the North Coordinate.	
	3.3	Proyects: A transfer Cuestions:	<del></del>
4.		plex Functions	M5-110 76
	: 1	Complex Entrations	<u>~</u>
	1	initiate Complexity Mark	 ۱۷ر
	15	Shoulanty	 16
	غرك		 17
	4.5		

	4.7	Consider Integration	
	1.5	Coupy Theorem	77
	4 +	· · · · · · · · · · · · · · · · · · ·	 277
	4. 0	белез of Complex Типли	مراد ال
	4.11	- Zeron and Singular blok or Following for Analytic Fund Levy	 راز
	4.12	Fosklaek	297
		Freelous GATE and the Oregines	283
<b>1</b> .	Prob	eability and St <del>atistics</del>	<del>1</del> 9 350
	4	Frobability Finely mentals	7.74
	52	Statistic	 hi'.
	53	Probability Blan nations	510
		Foreign for the graduate Generality .	1/2
6.	Nuni	lurical Method35	
	5.1	Pite-la: 707	
	A.2	Numbrial Sidius not exact to Traver Locations	'. =::3
	AA .	் பாள்க் 9 out pre-of Nantincal Algebra , and trans conde ( 4 Feb. 800	
		by Usection, English Fals , Vecant and New Hor-Baphson, Wothods	
	C.÷	The rest integration if (madrature) by Tippear malante 5 most ve Bule.	 በ ለት »
	t.i	All Totals - Notation of Critically Poliferential Equations .	
		Provious G47F Anni LSE GlassGary	372
7.	Franc	sform Theory	<b>W</b> 813
	<i>:</i> 1	Laplace Transform	7/14 14/15
	77	Cennition	753
	7.3	Transforms of Stall entary Lunce ons	. 127
	7.*	Fragueties of Lapitot Transferins	
	<b>7</b> )	Byoliustion of Integrals by England transports.	306-
	7.3	Investor Transferos – Method of Portal tractions	d Te
	:.:	Hort Stop Function	·10°
	7.5	- Second Shirtho Piage By .	
	∴5	Little de le tonce en	a:-
	7.10	Podod oficial are	433
	7. 1	auriorTrans`ars	dha
	7.12	Prior designation of the Condition of th	210
	7 10	- Դունելի նարդէ cns	510
		Previous CAR van DE Durantes.	درے رہے
Ĥ.	Sepon	nd Order Linear Parcial Differential Equations41	4-42n
	1; 7	্ৰ 🛮 এজা Fration of Second Gruler Linear PDLs.	4 14
	~	$-$ Undampto. One to improblem if $W_{ab}$ in post only brokens of $oldsymbol{v}_{ab}$ in the startest	7 L d
	5.5	The One Diriving and heat Conduction Biology (	
	ē.i	Turnus e Eq. arion for without a guidr Region.	
		G	-



# Linear Algebra

## 1.1 Introduction

Linear Algebra is a five in that mortismatics concerned with the dusty of vactors, with but the invertions called each to see that the an exposure and with large continuations and output medial processing to design in the Theorem reference and output medial each report. In particular transport and each to the medial each of the analysis of multiple and synthetic and matter algebra in the indigential process that the design in the operations transport and the firms for such as obtaining the operations transport and each of such as obtaining the operations transport and the firms for such as obtaining the operations.

Lists Agreement mater theory as a pysic handless in mode on a learness and has applicable a insurance process or righteen agreement should be accompanied on a record unknown as which expended which has been a list on a near the contract of the accompanied of the accompanies of t

nd the proposed we shall discuss more algebra are literated it softrog lines. Sys ⇒ 1 of απρώτους gyuguns As il Burout solding the Light value on Nami As = 6.5.

## 1.2 Algebra of Matrices

#### 1.2.1 Definition of MatHX

 $g_{\rm toperate}$  glads a summand that goes in the local distribution guarantee having to the conditional contribution.

 $\| x_i - \| g_i \|_{L^{\infty}} \|_{L^{\infty}}$ 

The war palment are conject property to verying in Helping and conducting.

## 1,2.2 Special Types of Matrices

1. Square Macrophysics in which whether one or the number of course continuous and the month control of the course of the first classical and notice of the course of the course of the course of the course of the first course of the course of the first course of the first course of the first course of the c

Commplex A 
$$\begin{bmatrix} 6 & 8 & 8 \\ -8 & 8 & 0 \end{bmatrix}$$
 = 2 discusse Martin  $\begin{bmatrix} 2 & 8 & 3 \\ -1 & 1 \end{bmatrix}$ 

2

A square a re-may met a square matrix A is dailed a far netple sub-histik form degena.

Although was also the discussion as elements of the matrix  $A_i$  So  $\left\lfloor rac{1-2}{4-5} 
ight
floor$  is a different means of

their stack given above 
$$1/\sqrt{\frac{|a-b|}{|b-b|}}$$
 is not

2. Diagonal Matrix: A ocume menic in which of diagonal seen should are zero in called a pictured

matis. The diagonal planetary systemas notice as 
$$\frac{[a_i - 0] \cdot b^* / a_i}{a_i} = 1 \cdot s = 0$$

$$\begin{aligned} & \text{Example}(A) = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 & \text{sign}(A) \text{with} \\ 0 & 0 & 0 \end{bmatrix} \end{aligned}$$

Tre exister relinación den de prépar de 4 e dioc 19, 8, 91

## Properties of Diagonal Matrix:

$$446 \left[ v(x, Z) + c \log \left( v(x) \right) \right] = 4 \log \left[ x + p \right] v + \gamma + \gamma + \gamma$$

$$\operatorname{deg}\left[a_{i}\otimes Z_{i}\otimes \operatorname{diag}\left(g_{i}\otimes g_{i}\wedge a_{i}\operatorname{mag}\left(g_{i}\otimes g_{i}\right)\right)\right]$$

(displaying the gray that 
$$P_{\mathbf{k}}(\mathbf{R})$$

$$(\mathsf{diag}[\mathbf{x}|\mathbf{y}|\mathbf{z})) = \mathsf{diag}[\mathbf{x}|\mathbf{y}_{t-1}]$$

$$(\log |f(\cdot|x|x)) - \log_{1}(x^{\alpha}|y^{\alpha}|x^{\alpha})$$

Externo an 
$$|\phi'(exag)|_{L^{\infty}}|\sigma|$$
 = Tag  $[\phi, \phi, \phi'] \in S(\sigma)$ 

3. Scalar Matrix: A socion hago, is a dreganol matrix with all plagons. Alements Leting equal.

$$\begin{aligned} & \textbf{Example:} \beta = \begin{bmatrix} 3 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} & (-is o scalar matrix) \\ & 0 & 0 & 5 \end{aligned}$$

4. Unit Metric or Identity Metrix: A equate matrix on a mile equate diagrams in ones to is it is no leads of whose non-lagural periods on tentagraphed unforms to an identity mains which is the  $p_{\rm eff} = 15 p_{\rm eff}$ Certify from a scale-gase account.

$$Independent fields \, \mathcal{A} = \left\{ q_i \mid \text{ so that } | \text{ while } \left\{ q_i + 1 \text{ which } i = j + i \text{ that } j = 0 \text{ which } j \neq j \right\} \, \begin{cases} \mathcal{A}_i = 0 \quad \text{if } i \neq j \\ q_j = 1 \quad \text{if } i = j \end{cases}$$

**Bromple:** 
$$\frac{1}{0}$$
 :  $\frac{1}{0}$  :  $\frac{1}{$ 

#### Properties of Identity Matrix:

- p(r,T) by the figure r is the r in r
- $(66 A)^2 = AA = A$
- $\tilde{n} \in \mathcal{M} + \Gamma$
- -fi + 1 = 4
- (5) iJ = 1
- $s_{\rm c}$  . NoR Matrix: The area of matrix was seen by smooth section from that  $s_{\rm c}$

Null ratios is noticed by G but matter decine, be shown by tide  $X = \mathcal{I}$ 

$$\begin{aligned} & \text{Example: } A_{2} = \begin{bmatrix} 7 & 0 & 0 \\ 7 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} , O_{2} = \begin{bmatrix} 2 & 6 \\ 10 & 0 \end{bmatrix}, O_{2\times 1} \times \begin{bmatrix} 0 \\ 1 \end{bmatrix}, \end{aligned}$$

#### Properties of Null Metrics

- $\{p\}: A+O=O+A=A$ 
  - $g_{\rm to}$  C  $_{
    m S}$   $\sim$  4.11 for identity
- $\partial \hat{\mathbf{n}} \cdot \mathbf{A} = (-\mathbf{A}) + i \mathbf{A}$
- 6. Opportriangular Matrix An interminingular matrix is a southerning at 1500000 flag and 949 1818, and 4460, including 5 whenever 5000.
  - I la depotre by ci-

The ringular and upper click group we have a symmetry with a 200 to  $-\frac{a_0}{a_0}=0$  . It is a  $-\frac{a_0}{a_0}=0$  . It is a

$$\begin{array}{cccc} & 2 & \xi & -1 \\ \textbf{Tx.emple} & \mathcal{T} & 0 & \mathcal{C} & \mathcal{C} \\ & \begin{bmatrix} 1 & 0 & 2 \end{bmatrix} \end{array}$$

T. Lower Telesquiar Matrite A lower thangular instriction about 1 worthwith assumption of the instrument of the August and Investigated and Investigated Englishment of the August and Investigated Englishment of the August and Investigated Englishment of the August August

$$\label{eq:continuous} \text{ following } \frac{d_{ij}}{|-c_{ij}|} = \frac{0}{1+\alpha} \frac{1}{\alpha} \frac{1}{\alpha$$

Bardansha by . .

**B.** Idempoted Matrix A matrix A is defed the  $0.04 \pm 0.04$ 

Example: 
$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ 1 & 0 \end{bmatrix}, \begin{bmatrix} 2 & 2 & 4 \\ 1 & 3 & 4 \end{bmatrix} = \text{Heavy postal democratical des}$$

**9. Involuntary Matrix**;  $\hat{\mathbf{A}}$  is said  $\hat{\mathbf{A}}$  is called involving  $\mathbf{r} \hat{\mathcal{A}}^i = \mathbf{r}$ .

**16. Nilposest Metrics** Actions A is A and A is A and A in the conversion of transfer and help A is A and A in A in A is A and A in since of relief in the two training  $\cos Ax = 0$ .

Example: The radius 
$$\theta = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 2 & 0 \\ 2 & -1 & -0 \end{bmatrix}$$
 is indepton, class is a constant  $\theta$  and  $\theta$  (  $0$ ),  $\theta$  and  $0$  (  $0$ ),  $\theta$  and  $\theta$  (  $0$ ).

Singular matrix: if the detainment, of a recursion to be, then many is getted as an quar marrix.

THE CONTROL OF THE EAST AND ASSESSED, THE REPORT OF THE PART OF TH

<sup>መ</sup>ር የመንፈርት ያስከ<mark>ር እነኛ የ</mark>ተመርመ ያቸው ከት አፍተኛ ቀስ ሚዲፈርት ይያለያቸው ነ

## 1.2.3 Equality of Two Matrices

we maintees  $A=\{\phi_i\}$  and  $B=\{\phi_i\}$  are seen to so  $\phi_i$  with

- i hava e nisar e a⊵a.
- $\mathcal{D}=\Pi$  also an indicators of a majorating places of the promote only the set  $[e_1,e_2]$  and  $[e_2,e_3]$  and  $[e_3,e_4]$

Example: Let 
$$\begin{bmatrix} x-y & y-y \\ y-y & y+y \end{bmatrix} = \begin{bmatrix} y-y \\ y-y & y+y \end{bmatrix}$$
. Then  $y = y = 0$  and  $y = y = 0$ .

 $= -x + 3(y + 1) \neq x + 3 \text{ and } q = 1$ 

## 1.2.4 Addition of Mutrices

Two metrices of and let not be injective for wedition only in they build have exactly the same state way and the latter than the configuration of the specific properties of the properties of the aA side in the first  $\|a_j\|_{\mathcal{D}_{\mathcal{A}}} \le \mathcal{Q} = \|\mathcal{Q}_{j_{\mathcal{A}}}\|_{\mathcal{A}} \text{ for } A + \mathcal{D} = \{a_j = e_j\}_{m_{\mathcal{A}} \in \mathcal{A}}$ 

Example 
$$A = \begin{bmatrix} 1 & 2 \\ 5 & 3 \end{bmatrix} \cup \cup \begin{bmatrix} 5 & 0 \\ 7 & 3 \end{bmatrix}$$
.

$$|x_{1}+2|=\frac{|x_{1}|^{2}}{|x_{1}|^{2}}\begin{bmatrix}x_{1}-3^{2}\\x_{1}-2\end{bmatrix}=\begin{bmatrix}x_{1}-\omega\\0&x_{2}\end{bmatrix}$$

#### Properties of Matrix Addition:

- 1 Matrix of Million you minutative カエタ・ネータ
- $Z = VO(C(s) \cdot D(s))$  is sectorable  $(A + B) = C \cup A + (G C)$
- $S=\mathbb{R}^n$  such both stability identity. If O be this in malks  $u_i(x)$  with less global stability and  $\operatorname{Theo}_i$  $A = O = A = C + A \cos(2\pi x \cos y) a$ ,  $x = \cos(2\pi y) a$ ,
- $A=\mathsf{Existence}$  of positive inverse. Let  $\alpha = |a_{n+1}|$ 
  - That the negative of matrix A is an fixed law map  $x \in a_i|_{x,y}$  , and it contains thay -A
  - Maid: -A election that said A Recapso (|A|) + A + C + A + (-4). Here C is no implies of
- $S_{\rm c}$  . Generally, on the fit depends of several and for considering values is  $V_{\rm min}$

$$A \cdot A = 0$$
  $A + A = B$ 

$$X = A + X + B = A = 0$$

 $\mathbb{R}$  . The equation A: X=0 has during  $+\infty$  ration j . Updated the j ratio X

#### 1,25 Substraction of Two Matrices

If  $\alpha \ge \alpha \le \beta \le \alpha$  and  $\alpha = \alpha + \beta \le 0$ .

 $\mu_{\mathrm{MS}}$  , we give the a - b is not in socious subtracting from which he has the constant signs when  $492^{\circ} b$ 

NOTE:Suppositing frequent lies some notices as assessed to

## <u>ு அ</u>ட் Multiplication of a Matrix by a Scalar

Let  $\rho$  be any  $\rho$  if we show that shows we in other child social the residuación is that so we have the control of the matrix A by A is a class so the matrix of the by A so that A by A is a class so that matrix of the by A so that A is A in A.

$$oxed{eta} = oxed{\mathbb{E}} oxed{A} \cdot oxed{eta}_{a_1 a_2 a_3} oxed{eta}_{a_1 a_2 a_3} oxed{eta}_{a_1 a_2 a_3}$$

$$\begin{aligned} & + \beta = \begin{bmatrix} 6 & 2 & 1 \end{bmatrix}^{2} & & & \begin{vmatrix} 15 & 6 & 2 \\ 6 & -5 & 2 & |n_{2}| & |0| & 2 \end{bmatrix} & & 16 & -16 & 6 \\ & 1 & 0 & 0 & & 3 & 9 & 19 \end{bmatrix} \end{aligned}$$

#### Properties of Multiplication of a Matrix by a Scalar:

- z=8 s.Ham will plot for complicate distinct the over 1 erable is non-monocontact  $2.7 \pm 3.4 \pm 3.5$
- $\mathcal{I}_{ij}$  , plants a conflict occupies and this way in a range  $x_i$  . Here  $Q_i$  is  $Q_i^{ij} = \mathcal{I}_i^{ij} = \mathcal{I}_i^{ij} = \mathcal{I}_i^{ij}$  . See
- $\beta = \rho \sin \theta$  and  $\theta \sin \theta$  (substituting  $A = (x_{0, \max}, 0) \times -i\theta$  )  $A = (0) \times 0$
- $L = \{(a,b), (a,b)\}_{a \in \mathbb{R}}$  the size of a finite constants. Then A(a,b) = A(b,b) = A(b,b)

#### 1之才 Multiplication of Two Maintens

Let  $x = x_{n,m,n}$   $y = [b_{p_{n,m,p}}^{-1}]$  so two instables with a final fraction of  $p_{p_n}$   $y \in \mathbb{N}$  where to the number of power  $p_{p_n}$ 

The i , which  $i \in \mathcal{F}_{N(k,r)}$  such that  $a_i = \sum_{i=1}^{k} \lambda_i b_i$  is usable to Hermitians which if  $i \in \mathbb{N}$  and we strike  $k \in \mathbb{N}$  .

#### Properties of Matrix Multiplication:

- in Municipality in matrices in not commutative in table. The involve AS constitution is shown expenses that the conduction by an invite also have the conduction of  $\mathcal{L}_{S_{n+1}}$  and  $\mathcal{L}_{S_{n+1}}$  and  $\mathcal{L}_{S_{n+1}}$  does not expense the expense of competition for individual on
- z=0gtrs, multiplication is avaidable. For the most by coscured the A(M)=(4800) where A(U,U) is the  $x_1,x_2,\dots,x_n$  for the surface connections.
- 3. With all so the all matrices is distributive with test residue of the first section AB + CC + AB + ACC
- 4. High opublion ஆடியுந்தது. நடிக்கு exercipionaly Indian Conflorida mat. ces சலாச் செய்யில் 2000

$$\operatorname{position}_{\Gamma} \operatorname{Formula}_{\Gamma} \operatorname{Ind}_{\Gamma} \left[ \begin{array}{ccc} -\frac{1}{4} & 1 & 1 & 1 \\ & & & \\ & & & \\ \end{array} \right] = \left[ \begin{array}{ccc} 0 & 0 \\ 0 & 0 \end{array} \right].$$

- In the table of made in (i), playting iii 48 ii. One situs nonnecessarily imply the PA F D in last 125 mass not over each.
- $y = (y_0)^T + 0$  and the latter product of a substance of the second contract of  $y_0$ 
  - AB = AC + B + C + A is not chause in our care.
  - .**94 -** CA→ 9 OH A Siron engela meak)

#### 1.28 Trace of a Matata:

Lat A fix a some a reduced process. The some of the alemand long proof participated by a strong discount denoting  $a_{ij}$   $\mathbb{T}(4)$ 

$$\operatorname{Tr}(B) \wedge B = \{a_i\}_{i=0}^n \operatorname{Heat}(B) + \sum_{i=0}^n a_i = a_i, \qquad a_{i+1} = a_{i+1}$$

Ler

$$p = \begin{bmatrix} 1 & 2 & p^{*} \\ g & 3 & 5 \\ -1 & p & p \end{bmatrix}$$

That Trace 
$$(A) = \overline{B}(A) = 1 + (-1) + 1 + ... + S$$

#### Properties of Trace of a Matrico

14. As to bibe two square manches thanks manths be a sector, I will

- 1. at 3.46 3.764
- 7 7(4 9) = mA + 268
- $J = m(AD) = h(BA) \int f dx dx A front dx are defined.$

#### 1.29 Transpose of a Matrix

Let  $\theta = \{0,1,\dots,T,m\}$  be the new principle and find a figure larger distance in the columns and the sub-larger than the backet fractions according to the object of the sub-larger property.

c) 
$$A = \begin{bmatrix} 1 & 3 \\ 2 & 6 & \text{then, } \beta = \beta = 6 \\ 6 & 6 & 1 \end{bmatrix}, A = \begin{bmatrix} 3 & 6 \\ 1 & 4 & 5 \end{bmatrix}$$

Thus 
$$(1 + | -2| | 4|^2 + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4| + | 4$$

#### Properties of Transpose of a Making:

TAT and All be irenaposas at Alleng Energoses we either

- $f = (f_i^{(i)})^* = f_i$
- S = (S p) = S' + B''
- $\theta = (80)^2 = 90^4, \text{ was regardly supplies runger}$
- $A = (\sqrt{2}^{-1} + 2\sqrt{4})$
- $S = (V_{+}^{*}(C))^{2} = (V_{+}^{*}(C))^{2} + (V_{+}^{*}(C))^{2}$

#### 1.2.10 Conjugate of a Marrix

Into first x post the Thom given result a Alph replacing its eller  $\theta$  by the conceptor and configuration where it is behaved by A.

Example: 
$${}^{1}\dot{A} = \left( \begin{array}{cccc} 2 & 3 & 4 & 7 & 6 \end{array} \right)^{2}$$

$$\hat{A} = \begin{bmatrix} 2 & 6 & 4 & 7 & -3 & 7 \\ 4 & -6 & 6 & 6 & 7 \end{bmatrix}$$

#### Properties of Conjugate of a Matrix:

 $\sigma$  A, and B, by the conjugates of  $\mathcal F$  and Biossochway Them.

$$S_{ij} = (A + i)(A + i)$$

$$S = \overline{\partial A^{\prime\prime}} + A \overline{A}$$
 is a side any early continued.

4. 
$$1/20 = \overline{AD}$$
, we give permitted at selection of this stimul

$$A = A + A + A$$
 nutrition of matrix.

$$A = A \operatorname{id} A \operatorname{id}$$
 purely maginary half  $X$ 

## 1,3,51 Transposed Conjugate of Matrix

The transpose of the conjugate of a matrix  $\Delta u$  salies transposed conjugate  $u^{(A)}$  and u has the u u u u

Example: 
$$\begin{bmatrix} 2 & 1 & 3 & 1 \\ 1 & 1 & 2 & 1 \end{bmatrix}$$

e find of less find in the 
$$\begin{bmatrix} 2 & i & 3.12 \\ -1 & -1 + i \end{bmatrix}$$

$$Ler(\mathcal{S}^k + (Z_0)^2 + \left[\frac{2 - 7 - 4}{3 + 7 - 14}\right].$$

Some properties: 1.74 & of polific franspoodd conjugated of Aland Briesden, rely then

$$2 - 934$$
  $64$   $6 \rightarrow 3$  prostumes:

## 1.2.12 Classification of Acal Matrices

Figure 5 bit can be the self-entropy of the first energies by eather for the discrept convent f' and f.

- 1 Mutp
- T = 34 mm/suric Matrices 1.00 = 40.
- $P = R \cos A R \cos B \cos B \cos B A^T + A(1)$
- $\mathbf{J} = \mathbf{C}(\mathbf{J})$ egena Marieco ( $\mathbf{A}^T = \mathbf{A}^{-1}$ or  $\mathbf{A}^T = \mathbf{J}$ )
- 1. Symmetric Metric: A deutald molds  $A = a_{ij}$  in sold to be symmetric. It is  $G_i$  prilled mortis is some as its  $G_i$  of a construction,  $a_{ij} = a_{ij}$  to individue.

In a symmetric matrix,  $m = \lambda_0$ 

$$\int_{\mathbb{R}^{n}} e^{-t} dt = 0$$
 Compute:  $A = \int_{\mathbb{R}^{n}} e^{-t} dt = 0$  if  $t \in \mathbb{R}_{n} \otimes \mathbb{R}_{n}$  then  $t \in \mathbb{R}_{n}$  is  $t \in \mathbb{R}_{n}$ . A

Note: or any matrix A.,

AA) is a ways a hymmetric matrix.

$$\langle a \rangle = \frac{2\pi k_{\parallel} A^{2}}{\epsilon_{\parallel}}$$
 is above, symmetric matrix

Note: Lá ana Airmaym, erás ibe i

- $(A_1 + A_2 + B_3) \otimes A_2 + B_3 \otimes A_4 \otimes A_$
- 3.1 AP. 64 has a meanable symmetric
- **3. SkewSymmetricMatrix** A section matrix  $H = \{u_i\}$  is smaller by great some of the  $i \in \mathbb{N}^n$  is smaller than the regular of the (i,j) defined at  $A \cap A \cap A \cap A$ .

In a spowery machine  $-\sin s \, A^{T} \, a = A$ 

A size by noted that the internet seems to in the diagonal

**Example:** 
$$x^{j} = \begin{bmatrix} 0 & 0 & 0 \\ -r & 0 & 0 \end{bmatrix}$$
 is a discovery range  $p(x) = p(x)$ .

Note: or the matrix  $\theta_i$  for more  $x=\frac{x_i-\mu^2}{2}$  is shown expansion of the  $\theta_i$ 

3. Orthogonal Metric: A square highly Aliqua dice om ogonal it.

$$A^{T} = A = -AA^{T} + AA^{T} + B$$
 . Thus April 40 on embegorial moldy high $AA^{T} + A^{T} + A^{T}A$ 

**Example:** The literality method orthogonal through I' = Ir = I.

Nuts: But with singled opportunity (a)

$$(\Delta x) = (x - y)$$

Solve) - en instituis protecces mana abaya has a mentionale

#### 1.2.13 Classification of Complex Matrices

Conclusion is expended that the problem to the problem of the characteristic areas of the first entering the sign of

- Let Hamilton Many (4) = 70
- Zillis de Ern i ko Vabia (41± 7).
- w Unitary Marie (A) A sa Aarily,

Example: 
$$A = \frac{a}{\left[a + ic - \frac{c}{c^2}\right]} i_{0} (a)$$
 for information.

 Skew-Hermittan Maurhe id no sweety zon is different ag eigen for eingen zu gegene der nacht in die Ed.

**Example:** 
$$A = \begin{bmatrix} 0 & 2 & 1 \\ 2 & 1 & 1 \end{bmatrix}$$
 to skew the tensor

B. Unitary Matrix: A to ken in which elegand to be unitary to

$$44 \pm 3.2$$

Vulliplying by it. See stry A we give a the none definition of unitary matrices given below: As correction A is said to be A in A if

$$2^{1/2} - x - 2^{1/2}$$

Example: 
$$A = \begin{bmatrix} 1-f & -1-f \\ 0 & 0 \\ 1+f & -1 \end{bmatrix}$$
 is an advance of the minimum in

#### 1.3 Determinants

## 13.1 Definition

Let  $x_1, x_2, x_3$  be any much intersult asymptotic  $x_1, x_2$  becomes in the number  $x_1, x_2, x_3$  and  $x_1, x_2$  becomes it is a constitution of the order of the number  $x_1, x_2, x_3$  and  $x_4$  and x

#### 1.3.2 Minors, Cofactors and Adjoint

If anyling the time and around easily distinge the elements  $a_i$  then the depend order downwise it has a limit to be the more of seasons exact earlier and  $M_i$ 

Example: The Minor of district in 
$$\mathbf{a}_{i}$$
 ,  $-\frac{S_{ij}}{S_{ij}} \cdot \frac{S_{ij}}{S_{ij}} = M_{ij}$ 

A mill at 4 Minor all element 
$$a_1 := \begin{vmatrix} a_1 & a_{12} \\ c_{21} & c_{22} \end{vmatrix} = M_{\rm el}$$

#### 1.3.3 Collectors

The minor  $M_i$  multiplied by  $(-)^n$  to salication colorion of elementar, we shall use the inferior of an order consequenting case to letter.

Example: Cofrects of 
$$\phi_i = \phi_i + (-2\pi)^2 M_i$$
 .

Colemn determines 
$$x_2$$
 ,  $h_{21}$  ,  $(-1)^{2/2}M_2=-\frac{m^2-m_0}{2g_0-m_0}$ 

by conditional parameters 
$$A_{ij}=A_{ij}=-\frac{A_i-A_{ij}}{A_{ij}}=\frac{A_i-A_{ij}}{A_{ij}}$$

(the polarization and matrix) the sum of the products of the elements of any row of colors to with a n-when  $n \otimes n$  colors are such that it describes a sum of the matrix.

Example: II 
$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & -1 & 3 & 1 \\ 1 & 3 & 2 \end{bmatrix}$$

$$\begin{bmatrix} 12 & -1 & 12 \\ -1 & 3 & 2 \end{bmatrix}$$

$$\begin{bmatrix} 12 & -1 & 12 \\ -1 & 3 & 2 \end{bmatrix}$$

$$\begin{bmatrix} 2 & -1 & 3 \\ -1 & 3 & 3 \end{bmatrix}$$

$$\begin{bmatrix} 2 & -1 & 3 \\ -1 & 3 & 3 \end{bmatrix}$$

$$\begin{bmatrix} 2 & -1 & 3 \\ -1 & 3 & 3 \end{bmatrix}$$

$$= (1 \times 12) + (2 \times 4) + (3 \times 12) + (3 \times 12)$$

$$= (1 \times 2) + (3 \times 2) + (3 \times 2) + (3 \times 3) = (3 \times 3)$$

## 13A Adjoint

White All the Herrer's of a matrix of are replaced by its conformation for not some of the megalic structure of a conformation  $\mathcal{A}^{H}$ 

$$\lambda_0 = C_0^{-1}$$
 
$$\Delta a | \Delta a = -C_0^{-1}$$

Protection shad climma it side (i.e.)

$$a = |a_{ij}| \Delta c_{ij} A = A |a_{ij}|$$

$$\Delta = \langle z_1 \rangle^2 + \frac{1}{\Delta} \cdot 19 (0.25)$$

#### 1.3.5 Determinant of order a

A peterminant of preparations of the address of the analysis experience

A celebration of order of a solution arms in a variety in the key of the  $a_{ij}$  and  $a_{ij}$   $a_{ij}$   $a_{ij}$   $a_{ij}$   $a_{ij}$ 

$$A_1 = \begin{bmatrix} S_1 & S_2 & \dots & S_n \\ S_{21} & \dots & S_n \\ S_{n1} & S_{2n} & \dots & S_n \end{bmatrix}$$

Condition  $A_{ij}$  in S we write S is equal to  $(-1)^{ij}$  comparing contaminants of order (o . In obstitute the S by leaving the reward obtains as they have the S

$$[A, a \in \mathbb{R} \times \mathbb{R} \text{ matrix if an } A] = \sum_{j=1}^{2} A_{i,j} \cap \mathbb{I}(A_{j,j} = \sum_{i=1}^{3} A_{j,i} \otimes \mathcal{I}(A_{j,j} = \sum_{i=1}^{3} A_{j,i} \otimes \mathcal{I}(A_{j,j}) = \sum_{i=1}^{3} A_{j,i} \otimes \mathcal{I}(A_{j,j}) = \sum_{i=1}^{3} A_{j,i} \otimes \mathcal{I}(A_{j,i}) = \sum_{i=1}^{3} A_{j,i} \otimes \mathcal{I}($$

Procedure is the entitle in paint by puperbook using any resylopportunity.

#### 1.3.6 Properties of Determinance

- The Malub of a color Meant sheet not change to entrows and solutions are improbanged to learn a long.
- 2. The first control of matrix A is this A is a gap place along. For  $A_0 = 0$

Nullan Allerwijn nau grunglis auf edia zero roce (or ab umnu-

Also il siry two rews for occumnation a metta A a a denir all the a A a b

Use flow, workwood wood, make is stated not also identified the value of externing it, omultated by -1

- If a field replace from the control of country of a development of the placeby sent in control for yourself representation of the first first properties.
- $\epsilon = 1.4$  hand responding might, and k , then a scalar fraction is  $V/\Delta$
- 5 (a) harviorment which start products of the viewers (s) boy invitationary with the calculation of sometypes (log with the colored column dept soft the colored rate e.
  - (by this Hermitian function of the discussion is A and A are the first A and A are the A and A are the A and A are the A are the A are the A and A are the A

Eranude:

$$\begin{split} P(\mathbf{r}) &= \delta \mathcal{A}_1 + \partial_1 \partial_1 + c(G) = X \\ &= \delta \mathcal{A}_1 + \partial_1 \partial_1 + c(G) = 0 \\ &= \mathbf{r}_1 \partial_2 + c(G) = 0 \\ &= \partial_1 \partial_2 + \partial_2 \partial_2 + d(G) = X \\ &= \mathbf{r}_2 \partial_1 + c(\partial_1 + c(G)) = 0 \end{split}$$

where 4.. 8, fit may be solved we also make in (15.5), fit is in  $\mathcal{D}$ 

$$g_{\alpha} A \xrightarrow{A \to 0} G \text{ than } A = \mathbb{R}^d$$
  
 $g_{\alpha} A \xrightarrow{G \to 0} G \text{ than } A = \mathbb{R}^d$ 

$$\sqrt{24} = \frac{1}{4}$$

Proof of  $h: AA^{-1} = [i]$ 

nomence. Talk 1911 30

 $|g|=g_{21}(g)$  where |g| we have  $A=\|A\|$  ,  $f_{1}$  the following to the provide for  $A_{23}$  ,

$$\beta = \left( Ad_{\alpha} A_{\beta} + A_{\beta} A_{\beta} \right)^{\alpha}$$

$$g: [Aspertion] = A^{(n-1)k}$$

## 1.4 Inverse of Matrix

The inverse of a metro-Alica staff Alica (near gutar (no... Alica Guardia given by the formula

$$A^{(n)} = \frac{A\oplus \{A^n_{n-1}\}}{n}.$$

Diverse of a month in observation (i.e.,

## 1.4.1 Adjoint of a Square Matrix

ടെ കട്ടിരു 150 ന്റെ കാന്ന ലേല് വി e sandosse ക്രൂട്ട് കൊണ്ട് വിച്ചിരുന്നു. weem ക്യൂര്യത്തെ വിലവു്ത്യും ഉപ ടെൽടെ പ്രേഷ്ട്രൻ ക്രൂട്ടൻ ക്രൂട്ടൻ സാസ്ഥിക്കാന് വിശ്യാസ്ഥാർ ക്രൂട്ട

$$56[(5) + [6:1]47].$$

#### Properties of Adjoint;

If the any property constraints are solution (Ad. 4) if (4 + 4)(4 + 4)(4 + 4)

 $\Psi \mapsto V_{\alpha} \otimes (\alpha \circ \alpha \circ \alpha)$  Having mapping

## 1.4.2 Properties of Inverse

- $1 2n^2 = 24n 7$
- ユープロ21号から(weige of epon officit AR → RALLy
- C. (2011-8-44)
- $4 + (ADC)^{-1} = 5 + 8^{-1}A^{-1}$
- So ITATE an n order singular media, n=,  $(n^n)$   $1 = (n^n)/n$
- C. This is expressing a singular matrix,  $\mapsto (3.19 \pm 0.95)$ .
- $\ell_{\rm e} = 1.015 \pm 9.00$  fields there is a short of the risk to inverse as given able to

$$\begin{bmatrix} 0 & h \\ G & B \end{bmatrix}^T = \frac{1}{(\mathbf{J} \mathbf{g}^T - \mathbf{g} \mathbf{g})} \begin{bmatrix} g^T & \mathbf{g} \\ h & b \end{bmatrix}$$

## 1.5 Rank of A Matrix

Rath sidefinally ranging  $x_{i+1}$  , then the parameter  $x_{i+1}$ 

#### Some important concepts:

- Submatrix of a Macrite 3.(appear Alice) yill strik of the five (Main Time in the a result obtained by conting some contained and a pre-counter from Alice is legally matrix on A.
- **2. Replicate Metrix:** A number i is sent to be the remark a matrix A if it possesses the tolerating traps that
  - [0,T] which all begans to the relation of the following consistency was a discontinuous new sector of x in
  - (a) If the math According say, equate submatrix should (r-1) and above, then the dense if single events must as route as very
    - िम्प विद्युद्धिको हिन्दु साल् (१९) या द्वारित हिन्दु करणा विदेश हो है। यह स्थाप द्वार प्रश्नित कर तथा। यह स्थाप द्व । अपूरुष्ट मध्य द्वारा करणा

#### **Olotes**

- $\mathcal{A}_{i}^{\prime}$  is the model is all such as  $\Delta \in \{0,1\}$  and  $A_{i}^{\prime}$  is a resolution of the first  $A_{i}$  and  $A_{i}$  is a finite constant  $A_{i}$  and  $A_{i}$
- The large dimatrix of v, V are so, example model in v, V , which is not equal to the solution of the solu
- (c). The rank of zonaccon of an istical space as former of the stability (p, p, p) = p(x)

(a) Hondoi timottisis semiyezi (leinin Are o Trioniyi ndopondonu od vediyixin Tirimotticat eo ti aptronun boriyiliyeziyin eyerindi. Adulta votabili iliye navis.

13

iag. Ha iony manis when tief ≤in i éa ha

is maximum on also  $z_{ij} = \pi m^2 c_i$  so

 $\chi_{\rm B} = \log \chi \, (A \tilde{\mu}) \leq {\rm Barch}(A)$ 

Baaki Mes ⊈ Dank Öl

E., Enny of Ardin milegal, A. Reits E.

- igy β<sub>3</sub>(k/45) 2064(41)
- ger Rankio agregia si benerile del son como sesenta collecció en

Egjejon form: Alluk i Nipiri panolen form i svily ii.

- 1 Feeding non-zero distributione y que la telli interestina non acido ente in il previore com nin noche decor inview in ginar ellen common or every record il elle see see controli de com
- $R_{\rm c} = 2.11$  to act observed with the Hawkit from non-zero tows.

The Using Congress witches have showed that evaluating the providing a matrices (ergor that  $y \neq y_0$  are seen to tended another to take that is an inequality of the ergor to the providing and the ergor that is an expectation of the ergor than the number of the ergor than the expectation of the ergor than the ergor tha

- the relation paragraphic point of the constraint of the constraint
- $g_{ij} = g_{ij}g_{ij}$  to  $g_{ij} \in \mathcal{G}_{ij}$  ,  $g_{ij}g_{ij} \in \mathcal{G}_{ij}$  with  $\mathcal{G}_{ij}$  and  $\mathcal{G}_{ij}$  are the second of i . If  $\mathcal{G}_{ij}$  is i and i a

#### 1.5.1 Elementary Matrices

An existing for fact a unit month by a single elementary constraint as whether contains when  $\epsilon$ 

#### 1.5.2 Results

- . However, the transfer of the confidence of the second  ${\bf R}_{\rm c}$  and  ${\bf R}_{\rm c}$
- two matrices are equivalent if an organic accordance from another my commentary rewise to a pour organization of the interpretation of the elementary matrix of the elementary of t
- is a financial policy of the matrices complexed a least two dimensions of  $X_i = 0$  and  $X_i = 0$  a
- 4. Bank productly two two two contracts occurred at the tensor (An  $\delta$ ) of  $\phi \theta = 0$  ().
- $S=\{A,B,B,B,B\}$  . The large equation is a soft for Bork (AB k.B) (B-1), Signs a

## 1.6 Sub-Spaces : Basts and Dimension

#### 1.6.1 Introduction

A motify combe independence of  $x_0$  with incorporate an energy for a summary model with the summary  $t_0$  and  $t_0$  and  $t_0$  with  $t_0$  . This independence of an area to a substitution of  $x_0$  in the second contribution of  $x_0$  is a second contribution of  $x_0$  in the second contribution of  $x_0$  is a second contribution of  $x_0$  in the second contribution.

#### 1.6.2 Vector

**Deferition:** And cared a large of the meanisted to a vocal. The unit of these and are called surrouners within a vocability personal or the specifical property. The large Unit a vocability is a vocability of the large Unit of the large Unit of vocability of the large Unit of vocability.

column matte. A vector whose components belong to a flat  $A \approx 20$  (abervior LA cools rate the light transmission of a Roal vector and that even the L is presided a coalege accounter  $n_2$  and

**The n-vector space. This**  $A\cap A$  is a first expression of  $A\cap A$  by Lee denotes by  $A\cap A$  is a Halling is vector spaces even  $A\cap A$  as a Halling tool field. Swittling A were space which hall A is a Halling tool field.

## 1.6.3 Linearly dependent and Linearly Independent Sets of Vectors

## 1.63.1 Uncar dependence and Independence of vertor

vactors) matrices (  $x_1, \lambda_2, X_2, \dots, x_n$  are sold to be preparational.

- 1 4l , it suggests (makes) (i.e. problems) a and samply grown
- The non-residual purely in the first substantial matrix  $X_1X_2 + X_2X_2 + \dots + X_{|X|} + 0$  of the element of the matrix of the second of the

## 1.6.3.2 Dependency (Independency of vector by matrix medical

- 1 f(x) candidates while of the given vectors are sequence number of vectors. The proposes a climately in Equation (
- 2. In the energy intermed with engineer varieties as a bound of the objectors. From the whole were a contract operation in

## 1.6.3.5 A vector as a Linear Combination of a Set of Vectors

**Definition:** A vector  $\xi$  which even be expressed in the form  $|\xi + h L| = -\epsilon |\xi_h^2| \approx \sin \phi$  or a formal comparative of the replication.  $|\xi_h| \le \epsilon e^{-\epsilon h}$ 

**Example:** Siver a prezent deposite in secondosta, abbei the la peaktions member obligh self sight control short of height of agricultation self-

#### Стиницийся

- 1. Since Brottle sees is [1.25] [2.30] if the inequality dependences
- 2.1 -chose from the set put sisting any of the zero vector, (2, and marky) equal cont.

#### Solunian:

L. Considerthe relation

$$[a_1[1,2,3]] - 0.12 - 2.5 - 19.5$$

The leastern single (with uto the morns) days an infinite equations

$$2k+2\kappa_1=0,\ 2\kappa_1=3\kappa_2+3,\ 3k_1=3.$$

As Y=0,  $X_1=\lambda$  and the only will be  $X_1$  ,  $X_2$  and there is the contribution of a single growth of the y values of y values of the y values of the y values of the y values of y values o

2. Let  $V=\{0,0,1,\dots,0\}$  be an any sine whose conjugate from a linear Theorems change in a single (q) some  $D(Q)=\{0,0,1,\dots,0\}$  by Q

lance the very prior of nearly assence of

## 1.6.4 Some properties of linearly independent and Dependent Sets of Vactory

is the reliability in is uncorrelated that the resource operations given set (in space  $x_i(0)$  ).

1. In switters continue, the the strict  $\xi$  . Explicantly set  $\eta, \xi$  ,  $\xi_{x}$  is the any devendent on have

$$\label{eq:continuous} \begin{array}{ll} & := (e_1^{(g_1)} + b_1 g_1) \dots (b g) \\ & := (b_1^{(g_1)} + b_2 g_2 + \dots + a_d) = 0 \end{array}$$

Associated and online approximated with the foreign in this latter, a stight since year in we always the interference to be described by each of the second of the second

$$91.51 - 33$$

- 2. Assume  $(\xi_1, \xi_2)$  satisfies the observed matrix  $(\xi_1, \xi_2)$  is a finearly talent and the matrix  $(\xi_1, \dots, \xi_l)$ .
- 0. Пле у вирелев, и в inear vicepe, doct soll situativy dependent.
- 4-9 Tay what the easily show of at every subsect of a time  $\gamma$  independent costs time  $\gamma$  independent.

#### 1.6.5 Subspaces of an N-vector space V

**Sefinitions** Algorithmentally set S of vertices of  $v_i(U)$  a solutions substance of  $v_i(U)$  , then the

- $1+\lambda_{i} \in \operatorname{arc}\operatorname{consten}\operatorname{constant}(R)$  for  $\frac{1}{2}+\frac{1}{2}$  knows a near Lengt  $\Omega$  and
- 2+3 is time-ther of 8 and 48 a scaling that 45 (scalars) in which in 6.5

Line by the integrated Section with the places the case of  $V(\mathcal{F})$  is lower with the contrastitutes of fixed the fixed in the place on with the easier.

For  $C_i$  subspaces of  $C_i$  are since the vector doing the production of section. The social zero **Bramph**:  $C = [C_i, (i, i)]$  is a fixed of a vector of  $V_i$ . Since it still east of sectors  $V_i$  is a subspace of  $V_i$  and  $V_i$  is a fixed by sector  $V_i$ .

#### 1A.1.1 Construction of Subspeces

**Theorem 1:** The set X cold the anomalous notice X by Y, which is the resolution of Y, X and Y by Y and Y and Y by Y and Y are Y and Y and Y and Y are Y and Y and Y are Y

**Def. 2. Basis of a Subspace.** A pollor vectors is pole to be a i Lesis of A subspace i'

- It is all some is spanned by the set, and.
- 2 propoli altroary roepercent

bills important to not be that the salint vectors

$$|e| = [1, 10, ..., 1], |e| = [0, 10, ..., 0], |e| = [0, 0, ..., 0, 1]$$

s a properties were  $x\mapsto x^{\alpha}$  by A

$$\kappa_1(x_1+\beta_1,x_2):=(1,x_1/2)=0$$

the -k=0 , i.e.,  $\epsilon_{g}=0$  to 1 of the co. is faculty independent and any vector

$$\left\{ \begin{array}{ccc} \left[ H_{1}, A_{2}, & A_{3} \right] \right.$$

al light expressions as

$$q = (2q C_1 + 2 \cdot 2q + 1 \cdot \ldots + 2q C_q)$$

Theorem 3: All kix kind a not special of the relative selected from a set of sections which special

us a set of vectors which spanis coespose &:

for table 1 through the percent that it is already a days of page it all peoply depends to the name members invisely suffice combination of the original normalization of the transfer of  $\alpha$  is makenaged 8.

Confidence that became we also dimetely matirity coproper places, a rise s,s , as  $s \in S$ 

#### 1.6.6 Row and column spaces of a matrix. Row and column ranks of a Matrix

Lot All Doler Maria Gradity Swink Geld F.

Label of the various of  $\sigma$  consisting  $\sigma$  which is a mass  $p_{\sigma}$  and  $p_{\sigma}$  and  $q_{\sigma}$  ,  $q_{\sigma}$ 

The score spanner by the Millary  $\Omega$  is the anti-period  $\Omega_{p}$  and p(t) effice space of t embry matrix  $A_{p}$ 

Page independence and introductions gradiente enterior sear respect, that display engine of applying

The space spanned as the problem is to define a map  $a \in \mathcal{C}_{\mathcal{A}}^{-1}$  by the distribution of the  $\mathcal{C}_{\mathcal{A}}^{-1}$  and the  $\mathcal{C}_{\mathcal{A}}^{-1}$ 

In 20 mass of  $\kappa$  . These the  $\kappa$  disclaim spaces of maps are respectively an letting the factor of  $\kappa$ 

Theorem 10- remultiplication accommon singular matrix to we minimize the  $p_{ij}$  kind an  $q_{ij}q_{ij}$ 

In a shifter manner, we may along that so  $n_2$  but  $p^2$  with with with which has a set p beginning solution of an entire

#### 1AA1 Equality of row rank, column rank and rank

Theorem 2: There were the figure indirectly are some doing with

Theorem 3: the column in various and such as a result of

**Carollary** InTherest kells, had a secretify the maximum number of its inertry independent  $a_{N+1}$  if we is the present of number of its ineasted independent sources. This is mean kind task in free also define the property independent of weak A and A and A and A and A and A and A are section in some reconstructions.

**Corollary 2:** To room and countries of on their weap convergence engage in  $x_i \times [y_{i+1}]$  nearly independent post and are as such palse as  $1/z_i$ 

#### 1-8-6-7 Connection between Pank and Spun

**Example:** Check filter sectors  $[r: 2] = 1[-2] \oplus [-1] \oplus [-1] \oplus [-2] \oplus [-2]$ 

Salustane

Step 1: 
$$f(x) \in J_{-1}(x)$$
  $f(x) = 0$   
 $f(x) = 0$   
 $f(x) = 0$ 

Step 2: find 19 rank

Since 
$$\begin{vmatrix} 1 & 2 & -1 \\ 2 & 3 & 0 \\ -1 & 2 & 0 \end{vmatrix} = (1)^{n} + (1)^{n} + 2(1)^{n} + (2)^{n} + (2)^{$$

 $\sim T \approx$  voctors are mostly independent and then exists of T

**Example:** These fithe vertices [-2, -3], [4, -3, -3] and [7, -9, -6] span [9, -6]

Salution:

case 
$$|A| = \begin{vmatrix} 4 & 0 & 3 \\ 1 & 3 & 3 \\ 7 & 8 & 8 \end{vmatrix}$$
$$= 16.5 - 48(-9.86 - 42.1.0)(22 - 48)$$
$$= 3$$
Substantial 
$$|A| = 3$$
Substantial 
$$|A| = \frac{1}{4} + \frac{2}{64} = \frac{1}{64} + 3 = \frac{1}{64} \times 6 = \frac$$

So the vertical [1,3,3] [4,3,8] and [7,8,8] aparta sods (-8,8) (4.5,6) and do not soon  $\mathbb{Z}^2$ .

## 1.6.7 Orthogonality of Vectors

erd.

 $\gamma=\pi_{m^{\prime}}$  while  $\gamma$  and  $\lambda$  are original along the  $\gamma$  and  $\gamma$  and the despredict  $\chi^{\prime}(\zeta_{2})$  (

**Example:** he vectors  $|a_i||a_i||a_j|$  and  $|a_i||a_j|$  are orthogonal.  $^*$ 

$$\frac{||\mathbf{S}_{\mathbf{r}}(\mathbf{t})|||\mathbf{v}||^2 \times ||\mathbf{v}||^2 + |\mathbf{v}||^2}{20 + (\mathbf{v} + \mathbf{v}^2) + 0}$$

**Example:** The soutcher [1, 2, 3, 4] [-2, 1] and a thought 3 and

$$|1 - 2|^{2} \times |-2 - 3| = \left| \frac{1}{2} \right| \times (-2 - 1)$$
$$= (1 - -2) + (2 \times 1)$$
$$= 0$$

**Example:** The vectors  $[f:\mathcal{B}_1|\mathcal{B}_1]$  vary  $[f:\mathcal{B}_2|\mathcal{B}]$  with the definition of

$$(7.8 \pm 7) \pm (9.8.7) \pm (3.8.0) \pm 1.8 \pm 9.$$

 $g_{ij}$  . Three vectors K ,  $X_{ij}$  വരു ആക്രസം തുന്നു. Neach is non-zero partitley are particles as additionable.

$$\begin{array}{ll} x_1 & \qquad \qquad x_1 \cdot Y_2 = 0 \\ x_2 \cdot y_1 & \qquad x_2 \cdot y_2 = 0 \\ x_2 \cdot y_2 & \qquad x_3 \cdot y_4 = 0 \end{array}$$

**Example:** The vertices  $\{1,0,0\}$ ,  $\{0,1,0\}$  and  $\{0,2,1\}$  is an of expensional

$$g(g) = (1 + 0 + 0)^{2} [0 + 0 + 1] = [0 + 0 + 0]$$

y = 0 ,  $x_{2}, x_{3} \in X$  ,  $X_{j} = X$ , each or which y = 0 is the restriction and sense comply and the shadow of the y

**Example:** The vectors [1,0,0], [0,1,1], and [1,0,1] are orthogonal with Panco are theative independent and harde specially  $A^{0}$ . They worms vasis for  $B^{0}$ .

Two corresponding |C| > 0 , the left set of the properties of the set of t

- A=- horse of the social  $X_{i}$  ,  $X_{i}$  ,  $X_{i}$  ,  $X_{i}$  and alter orthogonal fitting sign
  - (4) 0400004 a an I
  - $|0\rangle$  in cachived a maximity  $q_{\rm ch}$

The two contonions regards x and  $y_2$  which is x

$$|\mathcal{S}(-\delta)| = \delta_0 = s \frac{1}{\beta} \cdot \frac{I - I}{1 - I + \frac{I}{\beta}}.$$

Assemble, eigens vector X set be outperfed to a set in a sequence, deviate, and the early eigenstate by taking the following our A  $\phi$ 

**Example:** the call  $(1,2,1,1,2) \ge d(2,-3)$  and (3,-3) is an expression group of vectors for  $\mathbb{A}^2$ , an example of  $\mathbb{A}^2$  in wide or hope and another expression of the second of  $\mathbb{A}^2$ .

Id const. The set won orthogened basis of \$1 we need to demonstrate the test balls length.

$$||x||| = \sqrt{1 + 4} + 2 = \sqrt{2}$$

$$||x||| = \sqrt{2} + 1 + 10 = \sqrt{2}$$

$$||x||| = \sqrt{2} + 2 = 2 = 2$$

For experimental probability of the  $\left(\frac{1}{2^n},\frac{2}{\sqrt{6}},\frac{1}{\sqrt{2}}\right)$   $\left(\frac{2}{\sqrt{2}},\frac{1}{\sqrt{2}}\right)$  and  $\left(\frac{1}{\sqrt{4^n}},\frac{2}{\sqrt{2^n}},\frac{1}{\sqrt{2^n}}\right)$ 

## 1.7 System of Equations

## 1.7.1 Homogenous Linear Equations

В доселен.

$$\begin{split} & \mathcal{O}_{11} r_{1} + \mathcal{O}_{12} r_{2} + \dots - \dots + r_{10} r_{11} = 0 \\ & \mathcal{O}_{21} r_{1} + \mathcal{O}_{21} r_{2} + \dots - \dots + \mathcal{O}_{20} r_{11} = 0 \\ & \dots - \dots - \dots - \dots - \dots - \dots \\ & \dots - \dots - \dots - \dots - \dots - \dots - \dots \\ & \mathcal{O}_{21} r_{1} + \mathcal{O}_{22} r_{2} - \dots - \dots - \mathcal{O}_{22} r_{2} = 0 \end{split}$$

is a system of a momoporitor, equations to much cover a  $z_p, z_p = \lambda_p$ 

where A X (3) and  $x_0$   $x_0$   $x_0$   $x_0$  , matrices magnetically than postopally equal to the kystem of expension for the contradicting of matrix accounters.

$$f(\lambda = 0)$$
 (ii)

The matrix of is define aportion attituding of the system of occupion (is,

The set  $X = [x_0 + 0, x_1 + 0]$  ,  $|x_0 + 0|$  for X = 0 is a ways under of equality  $\{\}$ .

 $\dot{\mathcal{B}}$  in the anterestic form the number of saturates  $\dot{\phi}$  above  $\dot{\phi}$ 

Again suppose  $\mathbb{N}$  and  $\mathbb{N}$  are two solutions of (ii). Thus their measure in a limit  $\mathbb{N}_{\mathbb{N}^2}*\mathbb{N}_{\mathbb{N}^2}$  which is not  $P_i$  are three numbers, is also solution of (ii).

#### 1.7.1.1 Important Results

He number of findancy (laeps) deritaring is solutioned to helper out in an equations in one tables. We will be considered in each of many A. A.

η in gloke the number of paragraphs in the him is with the

#### 1.7.12 Some important results regarding nature of solutions of equation AX = 0

தே நடித்த மது தடிக்கு நடிகள் பார் பார்கள் பிடிய பிடிய All Indian Colt 2 Awill be milted at 2000 கூடியி. நடித்த நடித்த சிடுகள் சுரிய சிறியில் சிறியில் நடித்த நடித்த திரும் சிறியில் சிறியில் சிறியில் நடித்த நடித்த நட

**Gree Pointmaskitency:** This is a model with a magnetic expension of such a descent is absent to  $S^{-1}S^{-1}$ . As in with  $S^{-1}S^{-1}$  is a larger than  $S^{-1}S^{-1}$  in a subsection  $S^{-1}S^{-1}S^{-1}$  in a subsection  $S^{-1}S^{$ 

**Consider Strip or Substitute**  $x \in \mathbb{R}$ , the equation X = 0 will have only the frield  $(x \cdot y) = 0$  of  $(x \cdot y) = 0$ .

Note: That r = n + 1/4 + 3/46 A sinon subquart

**Sum 3: Consistent to Switz-Solutionally** a reversion begans of interpretability of AX = C. The first is easy, the experimental these contains a substance of AX = C. The first is easy, the equation AX = C will have infinite solutions.

Note: Income  $n \in \mathbb{R}^d \to \mathbb{R}^d$  and  $n \in \mathbb{R}^d$  by

#### 1.7.2 System of Linear Non-Homogeneous Equations

$$\left.\begin{array}{lll} d_1 \omega_1 + \delta_1 \omega_1 + \dots & = d_1 \omega_1 + b_1 \\ \partial_2 \omega_1 + \delta_2 \omega_2 & \dots + c_{2n}c_n = 0_0 \\ & \dots & & \\ & \dots & & \\ & \dots & & \\ a_n \omega_1 + d_{2n}c_2 + \dots & = \delta_2 \omega_2 + b_2 \end{array}\right\} \tag{1}$$

for a system of some non-configurations as some non-new map  $x_0, x_0, \dots, x_n$ 

fizee valte

$$z_i = \begin{bmatrix} a_{i+1} & a_{i+2} & s_{i+1} \\ a_{i+1} & \dots & a_{i+1} \\ \vdots & \vdots & \ddots & \vdots \\ a_{i+1} & a_{i+2} & \vdots & a_{i+1} \end{bmatrix}$$

$$\lambda = \begin{bmatrix} \frac{1}{2}, \\ \vdots \\ \frac{1}{2}, \frac{1}{2}, \frac{1}{2} \end{bmatrix}$$

where  $A \in \mathbb{R}$  denotes the A value of the constant A is a first the standard ellipse of the A value of A and A is single matrix equation A and A

\*ATY 64 of values of  $a_0(x_1, \dots, x_n)$  which almost enterly setting all these equation is called a solutions of the system. When the system of equations has an armore solutions, the equation are said to be consistent afterward they are said to be propagation.

$$\text{Into matrix} \ A_1 \ B = \begin{bmatrix} S_1 & S_1, ..., S_n & & D_n \\ S_2 & D_2 & S_2 & & S_2 \\ ... & ... & & & \\ D_n & S_n & D_n & & D_n \end{bmatrix}$$

 $\mathcal{B}(M(G))$  and the triangle of the quest system so so an arrive  $\mathcal{B}(M(G))$ 

Condition for Consistency: The vycte high regulations  $PV = \Theta$  is conviction, the interval  $x \in \mathcal{F}(Q)$  (i.e.,  $P \in \mathcal{F}(Q)$ ). Confidentially P and the condition of the condition  $P(A \cap Q)$  is  $P(A \cap Q) = P(A \cap Q)$ .

**Case** h **inclusive repull** u(A) = u(a, B) the system  $A \in \mathbb{R}$  not not all then We say that some expression in an added a.

**Euro Zenti astensistent systems** in the length (x,y) = f(x) + h(y). If the system is  $y(y) \in \{x,y\}$  is identified to U(y). We say, the time rank on this system is y(y) = h(y) and passes are y(y) = h(y).

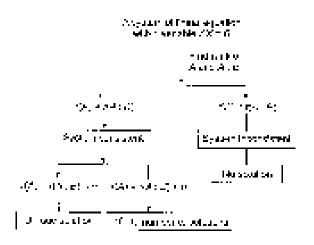
**Every: Complete Object of Solution**. If r(A) = 0.14, E(x) = 0.05, then r(A) = 0.05 by the formula of the section of th

**Coeff: Consistent inflations solution** if  $f(A) = (A \mid B) = (A \mid B)$  and the system is consistent surface in the number of studions.

In a little grown pain say the to look had

- $\sim 10^{16} (4.04) (4.08)$  (how extending force indicately)
- $S_{i} = \int \mathbb{P}[A(\mathbf{r} = \mathbf{r})A] \triangleq \mathbf{r} + S_{i}(\mathbf{r}) \otimes S_{i}(\mathbf{r}) + A_{i}(\mathbf{r}) \otimes A_{i}(\mathbf{r})$
- $Z_{n} = \Gamma_{n}(A) r(A \cdot B) = c_{n}$  bucons sectional relations  $A_{n+n}(A)$

The virtual available coupling so execute is solution if Toward can be divine they are designed for Cause. Shirt all on method which receives they allow to be Loboton form and that cause using the method to be set using the method of the second similar that all the second similar is the second similar than the second



#### 1.7.3 Homogenous Polynomial

The disading forms are polinted as a nonlegative p(x) while  $x' \in \mathbb{R}^{n}$  . Let  $x \in \mathbb{R}^n$  or a sum contribute  $x' \in \mathbb{R}^n$ 

Two variables  $(-1c^2 + 2cy + c)^2 = 2cy + 0$ 

This convariables :  $ax^2 + by^2 + ay^2 + by xy + by y^3 + by x + by xy + by x$ 

 $(e_{-k})(\mathbf{w}_{0}) = \mathbf{Q}_{0}(\mathbf{w}_{0}) + \mathbf{v}_{0}(\mathbf{w}_{0})$ 

Consult field import by appreciate appreciate of malitization

$$\mathbb{C}[(t)] = \mathbb{K}_{t}^{n} \times$$

$$= \begin{bmatrix} z_{11} & z_{12} & z_{12} & z_{13} \\ z_{21} & z_{22} & z_{23} & z_{23} \\ \vdots & \vdots & \vdots & \vdots \\ z_{2k} & z_{2k} & z_{2k} \end{bmatrix} \begin{bmatrix} z_1 \\ z_2 \\ z_3 \end{bmatrix}$$

$$= (q_{1,1}q_{1}^{2} + q_{1,2}q_{2}^{2} + g_{1,2}q_{2}^{2} + 12q_{1} + 2q_{1}^{2}) \cdot q_{1}q_{2} + (q_{1} + q_{2}) \cdot q_{2}q_{2} + (q_{1} + q_{1}) \cdot q_{2}q_{2}$$

train hard, deals eith this  $x_1x_2=8$  . Since  $x_{21}$ 

Soo its trit that  $x_{ij} = x_{ij}$  at the  $x_{ijk}$ 

poeticentalists, is a day

Lygan- a that coefficient of  $\gamma_i$  ,  $\gamma_i$  and  $\alpha_i$ 

Let 
$$|z_i| = |z_i| = \frac{1}{2} |G_i(1,S_i)|$$
 the spelitrent of  $\gamma_i$ 

$$\phi^* \sim \frac{1}{2}(4+4)$$
 = settiment of matrix

in the specific coupling (q,q) in (q,q) (q,q) (q,q) (q,q) where q in (q,q) in (q,q) (q,q) (q,q) (q,q)

$$X^{\prime}_{i}A(x) = (x_{i} - y_{i})^{2} + (x_{22}y_{i}^{2})^{2} + (x_{23}x_{i}^{2}) + 2x_{i-2}x_{i}x_{j} + 2x_{23}x_{i}x_{i} + 2x_{23}x_{i}x_{j} + 2x_{23}x_{i}x_{j} + 2x_{23}x_{i}x_{j} + 2x_{23}x_{i}x_{i} + 2x_{23}x_{i} + 2x_{23$$

Marik Air deficert na rw

## 1.8 Eigenvalues and Eigenvectors

Let  $x_i \in [q_i]_{i=1}$  be gray a reward determinant (1) is a given. The expectant  $Ak + \lambda\lambda$  is called eigen value and the first not zero self-than the expectation product. and these not zero self-than  $x_i$  . Yes, we have the largest value  $x_i$ : A first corresponding a values are called eigen values  $i \in A$ .

#### 1.8.1 Definitions

The matrix  $A = X \times S^{2} \oplus I$  characteristic matrix of A, where A is the unumerical size  $A = X \times I \oplus I$  and  $A = X \times I \oplus I \oplus I \oplus I$  are a line I.

$$\begin{bmatrix} \mu_{11} + \lambda & \omega_1 & \dots & \omega_N \\ \mu_{2N} & \lambda_N & \lambda_N & \lambda_N & \lambda_N \end{bmatrix}$$

$$\begin{bmatrix} \mu_{1N} & \lambda_1 & \lambda_2 & \lambda_1 & \lambda_N \\ \lambda_{2N} & \lambda_2 & \dots & \lambda_N & \lambda_N \end{bmatrix}$$

which is a simple conjugate in a cliptopie of is salled for an automorphism puly nearly of  $A^*$ . The equation  $A^* = 0$  is called for area shall be accepted in  $A^* = 0$  is called for area shall be accepted in  $A^* = 0$ .

Characteristic Rocks: The mode of the cone of wholis do lot on one ballod. Sharacteristic Rocks: A = -1000 for physical Ariest Architecture of concernations or expenses as the mass of A = -1000 for A = -10000 for A =

Indiachards  $x_i$  , with the rights a from |A| |A| + a, this in each a  $+ \lambda$  (is singular, representate which are the property  $\lambda$  and then  $(4+\lambda t)Y = \lambda (y/\lambda)(-y/\lambda)$  which is the Algebra y and y and y

Characteristic Vectors: f(k,k) and the other g(k) and g(k) and g(k) and g(k) and g(k) and g(k) and g(k)AA = AA and the less series a vector of operations that the quarter of a proper sections proof A.

## 1.8.2 Some Results Regarding Characteristic Roots and Characteristic Vectors

- $x \in L(S, \Delta)$  for the first  $h(S, \Delta)$  and  $h(S, \Delta)$  . There cost a notion of the A such that A  $g = \mu g$
- If if some or describe year in characters of contractors in given twee less that we use A. Let RA be a sometiment, and various of Aleganity is refining to the connecticity should be a single is now in a conjugation
- $\delta_{ij}$  . If  $\delta$  and substant to vector of a matrix  $\delta$  in this is the elegent comparison contamons  $\delta_{ij}$ velues at 4
- A=16 mobile A is a size more code of that deliver the  $i_{ij}$  and earlies the A -code  $i_{ij}$  be a model of associated organizations. However, the disagger values a profilezion to the integralizy or ingy notice a thoosts. independent digen valska k
- vali (CCCCCCC) = x icreets (Egenyalustricle ecositor increis a great
- $C_{\rm c}$  . This there is a reputy Light colling to a realizationer, it must be a final particular to a variety of  $C_{\rm c}$  .
- $7 \mathsf{Cl}$  where  $\mathsf{s}$  is the constitution of the problem is a final problem of the construction  $\mathsf{s}$  and  $\mathsf{s}$
- $\delta=\mathbb{D}$ te Ukuweloncho tooto (Pigansan e $\delta$ o ila teoriskow symmetric matrix zna  $\delta$ na prina orazunow or zer in dit every book matter sikket. Hann falle
- S = 1 involve well-index (Figure values to be underwinding are of that the the line  $\beta \in \mathbb{R}^n$
- $\mathbb{C}$  . The characteristic related Figure values reliable the quantities x will polyly the gauge lange every x, on ingular e un la su

## 1.8.3 Process of Finding the Eigenvalues and Eigenvectors of a Matrix

Let  $i=[0, \dots, 2^n]$  a social  $e_i$  is the of order  $e_i$  induced that if without  $e_i$  as some i -  $i_i$  ,  $i_i$  , j . The matrix 6.16 , Let  $\star$  parion by  $\lambda R \star \Psi$  . In some of or white of degree r in  $\lambda$  be two them denote These regular  $p_{\rm c}$ codinations of the softening page at

 $\Omega_{n}$  is a slot, au in the n decrease of n ( au (a) n is n ), au and au given by the non-zero see in au

## 1.8.4 Properties of Eigen Values

- . At see the eigenvalues of  $A_i$  from  $i(\lambda_i)$  with  $i(\lambda_i)$  with all eigenvalues of  $i(\lambda_i)$
- 3 The disprivation of Atlant Heredigicals of the disprivation of Atlanta

The 
$$i\in \{0,0\}$$
 ,  $i\in \mathbb{A}_q$  are two a gion with that if we  $\frac{1}{i}$ ,  $\frac{1}{\lambda_2}$ ,  $\frac{1}{\lambda_2}$ , are that a partial to the  $A_1$ 

- $f \in \mathbb{R}[\lambda, \omega_2]$  , as are the experienced by the  $f(\lambda_1^{\mu}, \omega_2^{\mu})$  is a remainder respect to
- $1 0 \lambda / k_0 z_0 + k_0 h$  of wheigen values of supon singular matrix A then  $\frac{|M|}{2}$  ,  $\frac{|A|}{2} = \frac{|A|}{2}$  and the eigen
  - values of Art of
- $S = \mathbb{D} \mathbf{u}$  on  $\nabla \mathbf{u}$  cased  $A = \mathbb{P} \mathbf{q} \mathbf{u}$  , we get  $\mathbf{v}' \in \mathcal{V}$ .
- and Security in a condition of the contract of

- F = Subjed when we use a Treaty of N = 2am at elegantal classyric.
- $S = free Colombig S (values <math>\omega \cdot A \cdot (|e|)$  At Head, one organizations zero in this substitution,
- In a transplant and diopring the real edge, selling are tributed determined consolved.
- 10. Gin ku mandos havo cama organizatu M. Ponnia iki exteknici Aleregen, jo tje ki rakojij there egytopini iki azigite in shikin soch tad  $p = e^{-1}A^{\mu}$

### 1.8.5 The Cayley-Hamilton Theorem

This it forestriates the test and the description and the method conflicting in the result is said. Also any positive the job extension in the extremediate theorem as a financiar thin manch messaging even project. We grapheless the summation in the heater  $x + y = y_0$ 

Statement of the Theorem: Every agustre manife said-leville ewing lineague (e.g., e.g., e.g., e.g.,

The near SUPL Log  $\lambda r > \lambda r$  is  $z_{r+1} \lambda + z_{r+2} + z_{r+3} + z_{r+4} + z_{r+3} + z_{r+4} +$ 

$$\mathcal{Z}(H) = \mathcal{Z}_{1}(H^{*} + \dots + \mathcal{Z}_{n-1}(H + n)) = 0$$
 (1.16)

**NOTE** Where  $\lambda$  simple the High Air the therebene, dequation the conclumntation  $\gamma$  should be implemented to gratie the result of Cay (with Miller Higher), where  $\gamma$  is the unit municipation.

Alcount tell (18 lots) is a full from Norwick in

## 1.8.4.1 Finding Inverse off a Matrix by using Cayley-Hamilton Theorem

Brample: Find 41 to Copyey-Heinity at preview [1]

$$A = \begin{bmatrix} 3 \\ 4 & 3 \end{bmatrix}$$

The the eigenvalue,  $\mathbf{x}_{ij}$  ,  $\mathbf{x}_{ij}$  ,  $\mathbf{x}_{ij}$  ,  $\mathbf{x}_{ij}$ 

$$\Rightarrow \frac{1}{4} \frac{\lambda - 2}{2 - \zeta} = 0$$

$$\Rightarrow \qquad (1 - \lambda_1/2 - \lambda) - 13 - 1$$

Balloy by Hammo Telepin.

$$A' = 9A = 10.7 = 19$$

$$f = \frac{1}{10} A^2 + 3A$$

The multiplying by Anticonard.

$$\begin{split} A^{**} &= -\frac{3}{3} \left[ e^{-3\pi t} + \frac{1}{10} \left( \frac{1}{4} \cdot \frac{0}{2^{3}} \cdot \left| \frac{0}{0} \cdot \frac{0}{3} \right| \right) \right] \\ &= \frac{1}{3} \left[ \frac{2}{3} \cdot \frac{3}{10} + \frac{1}{10} \cdot \frac{3}{10} \right] \\ A_{1}^{**} A_{1}^{**} &= 1 \\ A_{2}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{1}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{3}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{3}{3} \cdot \frac{3}{10} \right] \\ A_{3}^{**} A_{3}^{**} A_{3}^{**} &= \frac{1}{3} \left[ \frac{3}{3} \cdot$$

#### 1,85.7 Finding Higher Powers of a Waletz in Terms of ltx Lower Powers

**Example:** 1.7.  $=\frac{7^2+3^2}{2-2}$  , express  $Z^2$  as  $\pm 1$  despetyment et  $\pi/2$ 

Carrolla Microgresion is

$$x^2 - 3x = 0 = 0$$

by day over an ibnaried con-

$$-\mu^2 + \frac{1}{2}d \cdot a \cdot c \cdot c = 0$$

$$\mu^2 + \frac{1}{2}d = 0$$

z Alianos, o metric let a positificial A som the stillion composition also **maximum** degrees z z

ore three Alit  $2 \times 2$  watcan or learny cover of Alaba polynomial of degree 1. Let  $y \in \text{ext}[x,y] \in \mathbb{R}^d$  Alias shown below

$$41 \pm 104 \pm 109$$
 (1)

$$\frac{1}{2}(1+2)^{2} + \frac{1}{2}(2)$$

Year Entry (b), equipment (i), everyth-

$$A^2 = [24 - 100] + [24 - 190] + [25]$$

ho-

$$X = \{ y | X \in \mathcal{M}_A \mid \mathcal{M}_A \}$$
 (6).

Aggraph of the property of the characteristic permanent of the spectrum (0,1)

$$A^{*} = -10(4 + 10) = 80A - 27A + 100 J$$

h. 55.

$$Z^2 = 87.794, 80.70$$
 0.174

Applies belowing counter (it in occupion (its) weight

Machistha davilating and c

## 1.8.5.3. Expressing Any Matrix Polynomial and of size of a number Polynomial of Degree .5. The Alby Using Cayloy Hamilton Treurem

Example: A page a later present proportion of all 2 in 2 Matrix by a most polynomial in Ac-

**Example:** Lo. 
$$P = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$$
 Loss eas  $2A^* - 2A^* = 8^* + 47 \sin \theta$  is example?  $2^* \sin \theta = 47 \sin \theta$ .

Step-to First of all said at the construction of All Step-to-First of all said at the construction of All

hitte sea

$$\begin{aligned} \langle x_1 \rangle & \approx 1 &= \frac{3 \cdot \lambda}{-1} \cdot \langle x_2 \rangle \\ &= (3 \cdot \lambda) (2 \cdot \lambda) \\ &= \lambda^2 \cdot (3 \lambda) (4 \cdot \lambda) \end{aligned}$$

ce tie pratabaro, y subsigno Air [A-Pr] - 3

$$E_{i}(\mathbf{b}) = E_{i}(\mathbf{b}) = \mathbf{1}$$
 (2)

Step  $\mathbb E$  By that by the transfer fraction, matrix  $\delta$  solid by throughtfun(). Herefore, but if  $a \in \mathbb R^+$  (if the get

$$\frac{\mu^2}{2} \cdot 54 \cdot 7 = 0$$

$$\frac{R^2}{2} \cdot 54 - 7I = 0$$

Step 3: Find the  $4\hat{x}$ ,  $4\hat{y}$  ,  $4\hat{y}$  with the field of  $(\hat{x})$  by  $T_{10}$  cose.

which significant polymer in A

#### 1.8.6 Similar Matrices

 $\pm 6$  Hardada Alana Siere exist suice similar. Il nore exists a non singular matro is such acta  $\Theta = e^{i\phi}$  with

#### 1.8.6.1 Properties of Similar Mairices

Aisalows ap jartg at

Proof:  $V(x) \in A_{\infty} \times A_{\infty} \times A_{\infty}$  of this arrays from single an intercept of the first term A

nationInch Start Season is yet.

**Proof:** it: A is similar to A  $\oplus$  or  $A = \frac{g-1}{2}A^{g}$  (where  $A \times \text{transpirity} \mathbf{1}_{A}$  ).

Free foliphyng spovolegustor by Pland Satzyra I pryng cyffir rwygei 750 i Lli75 i Affolic yy. Tail Alli 750 i

Sp 8 o a Standard A

0. The isomlarm Stand Shamle end 🖨 🖨 ខុ ស្នៀកម្រាស់

 $C = O(16^{-1})/(66)$ 

Now but if  $BQ \cap D$ , we get  $C \cap D$  if all this proposition for simplicity C

- Consulting place the fight will be a very earlied by 2 of the similarity related between matrices in to bords, settinger and finish when the reserves itself-inguity 9, pp.
- Chillen invinced have the some observation.

#### 1.8.7 Diagonalisation of a Matrix

Finding the amount destruction to expond month and addisonmination is a place by equipment of the month of a continuous section of the month of a continuous section is a continuous section of the month of a continuous section is a continuous section of the continuous section is a continuous section of the continuous section of t

$$A = 40.236$$

strong at a differential in the

#### Condition for a Matrix to be Diagonaleable:

- 1. A levestary and sufficient conduction for norm in A<sub>gas</sub>, (a) = Taggara is at least faithful action (a) t<sub>i</sub> was a fine-typic dependence generooder.
- 2. A Noticia cital techa esparyi conclusion organizate  $A_{\rm min}$  to be despent back to that the model may be according to the relative back.

This is because this matterness of these year eperment eigenvelops the situatedy like x impury the period to generate (articular to converge militarian as x).

Wwin Air peginalist Ha $A = k T^{\dagger} D K$  where he mains G is a diagonal manuscript two istriction. elective upsight as its discount elements. Also not per appending mapp. Machine described by constructing  $a(\mathbf{c})$  , which with each of time are the eigenivesters of A .

#### Practical application of Diagonalization:

Consolithan seed of Techniques (and in the Control of the Techniques of American Scientific

If  $m = 30^{3} 436$  I on  $m' = 66^{1} 12^{3} 36$ .

The entropy of  $\mu$  by makes it ensystems of  $\mu$  by the Lights  $\mu_{2}$  and  $\mu$  in  $\mu$  is  $\mu$  and  $\mu$  in  $\mu$   $\Sigma$   $\Sigma$ 0.100 Mean sets a considered with a normalization  $\hat{A}^{\rm T}$ 



## Previous GATE and ESE Quescions

		78 (2)	2"
Q.1	. Siven Mayic $[k] \perp$	الم الله الله	Prugera kolde
	Cicentia, in [4] =   matrix is	2	I_
	lil. =	45.3	
	ret d	10,	
		10E. CA	VTI-2000, 1 mark].

Q 2 - Curkber i et getend brindlangdie gipe, gre

$$x = 2y = 7 = 6$$
  
 $2x + y = 27 = 6$   
 $x + y = 2 = 6$ 

Ti-xax → In-

- (A) Cique sontra
- (a) lel ribe rumper al se ullors.
- is) Le solution
- (id) eksig gilada gali fijeliki

O.A. Considerational personal in territory arises

$$\begin{vmatrix} 2 & 1 & 2 & 1 \\ 3 & 3 & -12 & 2 \\ 1 & 2 & 3 & 2 \end{vmatrix} = \begin{vmatrix} 5 \\ 6 \\ 1 \end{vmatrix}$$

Material Researchers the control and soft The eye indications is are metry dependent. Fachow not was the relative expellent of eduation of again in to yill any colutions.

. Q.4. Fig. in particle 
$$\begin{bmatrix} 1 & 1 \\ 1 & 4 \end{bmatrix}$$
 for a gen values and

- igan Jama S
- íci Bland Sil
- Jit and o

[MF\_GATE-2003, 1 mark1

© Sill Bir wifer volunt level the metric given below assemble lingula Y

**急度 一書名 智良 Step symptotal (activity par**) zero determinant, tip $T_{\rm c}$ uu,  $= T_{\rm c}$ the i  $T_{\rm c}$ tik.

- (4) (7) (7) (4)
- (b) CDA
- 1601 4767
- ic) versing, accessance vis.

 $\mathbb{Q}[T]$  . Here, it work is the least choose the following protocol on Inper dation one gave 4.

$$|x+y| = |x-y| + 2 \qquad \forall x \cdot 2y = 0$$

- (a)  $\mathbf{r}(\mathbf{r}) = \mathbf{r}(\mathbf{r})$  any  $\mathbf{r}(\mathbf{r}) = \mathbf{r}(\mathbf{r})$  with  $\mathbf{r}(\mathbf{r}) = \mathbf{r}(\mathbf{r})$
- (4) 10 Y (біліры
  - [CS\_GA\_E 2004\_2 marks].

O.3. The eight values of them at is  $\begin{pmatrix} 4 & 2 \\ -9 & 1 \end{pmatrix}$ .

io; are Land 4.

(b) and if who 2

ic) are bland c

(d) gg a g(l + -l-) end i en [CE\_GATF-2004, 2 mar45]

 $|Q(g)| = |g| \times |g| \cdot S^{1/2}(g)$  or g with solutions of the matrix given

\$ 5 \$>0 (5) 7

(3: 10

ME GATE-2004 1 mand

법의의 Consider  $t \leftarrow 0$  에  $t \leftarrow X_{A_1 \cap B_1} \stackrel{M}{=}_{A_1 \cap B_2} t \cap X_{A_2 \cap B_1}$ The amount [편 조건이  $x^{A_1} \cap B_2$ 

- $100,05\times 3^{\circ}$
- (b)  $(2 \times 3)$
- 10] 14 (12)
- $-(\underline{0})(\hat{y},z,t)$

[CF, GATE-2005, 1 mork]

Q. jif. Give rendam profimazio

$$A = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & -1 & -1 \\ 1 & 2 & 0 & 0 \end{bmatrix} = AA^{-1} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = 0$$

$$0 = 1 = -1$$

(c) 
$$\begin{bmatrix} \frac{1}{4} & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & 0 \\ 0 & \frac{1}{4} & 0 & 0 \\ 0 & 0 & \frac{1}{2} & 0 & 0 \\ 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & \frac{1}{2} \end{bmatrix}$$

$$\begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & \frac{1}{2} \end{bmatrix}$$

(EC. GATE-2005, 2 marks)

$$\begin{aligned} & -1 & (9-1)^{2} \\ & \mathbf{G}_{1}(\mathbf{2},\mathbf{1},\mathbf{R}) = \begin{bmatrix} 2 & 1 & 1 \\ 2 & 3 & 2 \end{bmatrix}, \text{ then sup} & (3)^{1/2} & 3 \\ & (2)^{1/2} & 5 & \mathbf{e}_{1} & (3) & 0 & 0 & 1 \\ & (2)^{1/2} & 2 & 0 & (3)^{1/2} & (2)^{1/2} & (2)^{1/2} \\ & & (2)^{1/2} & (2)^{1/2} & (2)^{1/2} & (2)^{1/2} & (2)^{1/2} \end{aligned}$$

G. 8 Lis,  $A = \begin{bmatrix} 12 & 0 \\ 0 & 2 \end{bmatrix}$  size  $A^{(i)} = \begin{bmatrix} \frac{1}{2} & 6 \\ 0 & 0 \end{bmatrix}$ 

П ногіч+ 5

26 11

. 191 . <sub>64</sub>

 $|\psi\rangle|\frac{H}{20}$ 

EC, CATE-2005, 2 marks)

- Q.14 Crandonno i confromageneous evolutico<sup>2</sup> mean equationo representat promitema i nº 7 a 5 a 4/15.
  4 a servicio et acesses for all accompany a fill to.
  - talminhedisessen Such alsystem will be
  - (5) Gens Stepf having with a block blich (c) consistent having stary southors
  - (g) in periodent healing diunique solution.
  - ic) modisalah, hasing caso dia

(CE, GA(C-2005, 1 merk)

- 5) (5 A is 5 B b 4 hold matrix and A f = 0 is an inconsistent eyeler in the element of A is consistent entropy of A is
  - ;41 **1**
- ரு ம
- 16; 3
- 4:1

"MF GATE-2006, . mark)

- Q 16 In the notify equation existing which of the hollowing is a represently condition for the extension of all each or solution is the white wastern.
  - ia: Augmentopingum [Pg] niu-finasa fia 2002 ia: kisa dialife P
  - ijbi Madweighilast, levelod yn 69-7010 o ordona.
  - 6.) Molde 8 must be singular
  - (ர) வதர்ச் சிரையாக வுண்

(EE, GATE-2005, 1 mark).

Ö, i / Congress (ne fish wang system at ocuations in three lead of action x<sub>1</sub>, x<sub>2</sub>, and x<sub>3</sub>.

$$2x_1 - x_2 - 2x_1 = 1$$

**36. 26.** 
$$1.5k_0 = 3$$

$$y_1 = 2y_2 + y_4 = 3$$

- Tilk system of thurst one has
- (for 20.68 after
- (b) curleue sol rive
- )  $\hat{\rho}$  in the that one bulk is in terminated by the residual  $\hat{\rho}$
- Clear Object and the subtree.

[05, GAIE 5005, 2 mar/s]

Olia which are of the following is an eigenvector in



[ML, 3A16-2005, 2 marks].

S.19 For the label 
$$A = \begin{bmatrix} 3 & -2 & 5^{\circ} \\ 0 & 2 & 1 & 5 \text{ min 5} \text{ The Higher} \\ 0 & 0 & 1 \end{bmatrix}$$

VANUE A HOLD FOR 20% and difference by sear ergon whole 2

$$\begin{array}{c|c} |S| & |C| \\ |D| & |C| \\ |C| & |C|$$

1=E, 3ATF-2005, 2 marks1

 $\dot{\Omega}.80$  GeV in that while  $(\frac{4}{4},\frac{2\pi}{3})$  the again sentence

$$(9) \frac{\beta_0^2}{\beta_0^2} \qquad (3) \frac{\alpha}{\beta}$$

$$(2) \frac{\beta_0^2}{\beta_0^2} \qquad (3) \left(\frac{\alpha}{\beta}\right)^{-1}$$

1±U\_GATE-2005, 2 granxs]

Q 21 Pd at a 9-1 dialogon values of the releasing 2 x 3, maps 3.

[OS\_GAIF-2005, 2 hierkg]

- GISS Consider the system of occasions  $A_{position} = \lambda_{position} + \lambda_{position} = \lambda_{position} + \lambda_{position} + \lambda_{position} = \lambda_{position} + \lambda_{position$ 
  - $\chi_0^2$  flor a homogeneous x=0 system of  $[i,j]_{0}$  equalities,  $u^2=2.79=0$  has i,j=n ),  $j\neq j$  so that the last of (4-27) is get 190 m
  - (to refinding AT language palative phage) (aP) aFree Harmonique and Lagrage
  - (१८१४<sup>९</sup> संग्री 1947) है। यह १८ आहे
  - (5)  $A^T = e^{-t}$  en  $A^T = e^{-t}$  en  $A^T = e^{-t}$  (c)  $A^T = e^{-t}$

IOF, GATF-2005, 2 marks1.

**Q.23** Multiplication of notices which fix  $\mathbb{Z}/V^{\mathrm{reg}} \gg_{\mathbb{R}}$  . The different

Alta: sare maris 25

$$\begin{array}{cccc} & \cos\theta & \sin\theta & 0 \\ \phi & -\sin\theta & \cos\theta & 0 \\ - & 0 & 0 \end{array}$$

[MF. GATF-2006, 2 [PBIKS]]

- answichusing thy doves given intro-and fassi-
  - A. Singula matix.
  - Builtish også a metak
  - C. Pealsyrmanic
  - D. Calley we male اللطعي
  - t, (peje sine u kompožnici
  - Sil Dejermine il sia www.coc.
  - Determinant aut 65.
  - 4. Local values elements/97001
  - да чуска что в 1951.

- (0,1)
- 26 2 ·

 $|V = |U_0|[2-2008, 2]$  marks!

$$2.26 \text{ M} = \begin{bmatrix} -11 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ 5 \end{bmatrix} \text{ and } A = \begin{bmatrix} 2 \\ -7 \\ 2 \end{bmatrix} \text{ are } B \leftrightarrow$$

cooliging. An enth spicial is small become factor (g. 3) acan thai contains 11 %. O x

[RF] (BA1E 2006, 2 marks].

ල paliyarch (Islima). Usjej sija i disertivi corice) — (IJ.27 i religil wing striktib i nozra dese ten අමත indisolution to the previous of action

$$\mathbf{s} : \begin{bmatrix} 0 \\ 0 \end{bmatrix} \qquad \qquad \mathbf{s} : \begin{bmatrix} 0 \\ -17 \\ -41 \end{bmatrix}$$

"EC. CATE-2006, 2 marks"

 $(0.20~\%)^{-1}$  for the the system well will by the sector no intend  $4\gamma+3z=6/2^4+1.19$  and  $4x^4/2_5=3$ 

 $g_{\rm eff}^{2} = 0.5 - 1.2 = 4.3$ 

- y(y 1) y = -3/(2 2)
- $(2) \cdot r = r \cdot p = 1/2r = 4$
- ed) nom det stone.

[CS, GALL-2008 | 1 ms-k]

Q.29 for the part 
$$\star$$
  $\begin{bmatrix} 4 & 2 \\ 2 & 4 \end{bmatrix}$  the regardance

-codescent at A prime picture as  $\left\lfloor \frac{\partial H}{\partial t} \right\rfloor_{t=0}^{t}$ 

- :::1 h

[FC (RATE 2006, 2 max+6]

ggggggljaar k3. Indichertwoleiga izon 659 S

- (b) 3. <del>-</del>₹
- (g) 2.5°
- :u: . 5

FOE, 0,415-8006, 2 marw.]

$$\mathbb{S}[S(1)]$$
 again values of a matrix  $S(2) = \frac{3}{|S|} \cdot \frac{2^{-1}}{3}$  are Sign 1 .

Grant and The Biger I values of Pip in Strik

- 35 355
- (c) ned 25.
- abid sodal

- [9-5 and 1]
- Michael C ME, 37. (-2008) 2 crarka).

2.52 To sig⊶ ikatusa and the bol a-painging a gen 2000 ж. бенд жылдат жага діяна ду

$$A = A \qquad ||c_n = \frac{1}{n}|$$

$$A = A \qquad ||c_n = \frac{1}{n}|$$

Intermor Nowal

- Q.33~[A] . Victuate that  $\lambda \approx 2 m_{\rm B}$  in the hymotopies Not show by the  $a\to a + a + b$  ,  $[A^*] \to [a + a + b] \to a + a + b$ at maintiference of the community and period 2x[5] = [a + 14.5 and (b) = [a] + 3.5194p000 vaid. Which include to low re, arote we ta: 5 IRJE2
  - (a) So  $\mathbb{P}[S] \otimes \mathbb{Q}[\Omega]$  are symmetric
  - $i \in \mathbb{N}$  . (5) and  $i \in \mathbb{N}$  is the energy property
  - (น้ำได้) \$646+650 การ, ปลาปาย โดยรูก กลุงไป gđi kili alayume, je godi pri iz skletovoj milejopi (CF, GATE-2007, 1 mark)
- **G.24** that means—of the 1-2 matrix  $\left[\frac{1-2}{2},\frac{2}{7},\frac{2}{7}\right]$

for 
$$\frac{1}{5}\begin{bmatrix} -i & 2 \\ 5 & 1 \end{bmatrix}$$
 (b)  $\frac{1}{9}\begin{bmatrix} -i & 2 \\ 5 & 1 \end{bmatrix}$  for  $\frac{1}{5}\begin{bmatrix} -i & +2 \\ 5 & 1 \end{bmatrix}$  (c)  $\frac{1}{5}\begin{bmatrix} -i & +2 \\ 5 & 1 \end{bmatrix}$  (d)  $\frac{1}{3}\begin{bmatrix} -5 & -4 \end{bmatrix}$ 

 $0.35/8 \pm 6$  , which will be traded contract which

Tiga kamar satu 2001

- (t) 008/50 4 Jeto (t) 155 Ans. 454.1
- 44) Bart ugena -
- (3) пентеркір

IEE G/C 2007, 1 Mark 1

- GRB this given that  $Y_1, Y_2, \dots, X_n$  is a few supplies. OFFICE IN vectors. The differ signiff the vector also respainted by the SM very  $p_{\rm sale} (q_{\rm poly}) = q_{\rm poly}$  $-K = \{ \hat{\beta}_{12}, \dots, \hat{\beta}_{1d} \} \}.$ 
  - (0) 244

  - #( (X + ))
  - (a) 14.
  - (a) additional in . With section  $X_i \in \mathbb{R}^{n_i}$  ,  $X_{i+1} = X_{i+1}$ [LC, GATF-2007, 2 marks]

- Quart Considerant let in (all print contains political to  $\mathcal{S}=(x,z,\mathcal{H}^0)$  ,  $x_1=x_2=x_3=x_4$  with  $x_3$ 
  - $\{0, [[1, +1, 1], 1], [1, 1, 1]\}$  is a case in pre- $\operatorname{subscap} = X$
  - $\mathcal{R}^{1}([1, 1], \mathbb{R}^{d}) = [0, 1, 1, 0] + [J^{2}]$  with Health copposition retublic Lacos not sport Kielvill, et sfore is الإران ووجا دامه
  - ion file work a bacage ion ye
  - (v) None of the addition

iC8, BATE-2007, 2 markst.

O.33 for which inslues on pulsars to the later to organization acceptance in the property and interpretation of the contraction of the cont price chorse.

5/39 Петапраго познутавальные едеродуще

2 40 ਵਿੱਚ ਹਮਮ ਭਾਰੂਦ ਭਾਰਤ ਦੁਸ਼ਤ ਭਾਰਤ ਹਨ। ਤੋਂ ਹੈ ਤੋਂ ਸਮਾ ਸਮਾ ਸ਼ੁਕੂਤ product f(x) = f(x, x) + f(x) = f(x) + f(x) $\lambda = [\ldots \lambda_{n}]/n$  where N is the maintaining value of N . Fig. 3 Journal Melions representatives allega

honord agent will early March

(c) 
$$0 = 1 = 1$$
  
(d)  $1 = 1$ 

16

forty 2.0 IEL, GAIN 2007, 2 market

Q.41. It in the construction parameter (a) exist in a parameter of the construction of the construction of the construction.

What show a Heiligen you go

IDE GATE-2007 1 mark

- G.42 Talegua et reha Alishoal and parmious littori Heager verses
  - (building a speed mo.
  - (b) are atways that and positive
  - (virians a travelles) and non-negative
  - (ж. жылы тапрых от јады, разу

Statement for Linked Answer Question 48 and 44.

Cayles I printo i i frebren estas dutt**a square main** e Parallex i kinkon pravacterista, eccation. Consider di Paris

- 0/3 Alsa Sies manetation
  - $g(\hat{p}, A = B) = 2A^{-1} + O(\hat{p} + Q) = 2A + O(A)$
  - (31/(3+7)(5+27)+3(6)(3+6)(4)=0.

(Es, GAIE 2007, 2 marks)

- Q.44 .<sup>91</sup>90.150
  - $\{a\} \in \mathsf{Fid}(\mathfrak{g}) = \mathsf{Rif}(\mathfrak{g})$
- This year all a means
- (c) 3424 1887 = 400 man (64)

[EE GATE 2007, 2 morks].

- Q.45 The product of monocoles (\*\*C\*\*\*P\*s)
  - 10. E-
- $_{120} \odot 1$
- A 2010 PE
- 00 00 AT
- [GE\_GATE-2008, 1 mark].
- OPS A in the Color with management of the Color of the Co
  - $(a)\wedge a^* \alpha = a$
- $|(\underline{b})||_{L^{2}(\Omega)}(\overline{t}=\Delta)$
- 151 4414 7
- اهر الكاشرهر راشا

[CE GATE-2006 2 marks]

- 0.47 Henchark of the 8.86 matrix O is 4, from which
  - and the lattering extense twick in each
  - (s) A of lieue to a hegaly in Equations and tour incompandement columns.
  - the CV-I have turning the intervence on lows or a fixe in early independent on this.
  - $(c^*/2O)$  with parameter c
  - ydir waarah aa mediale.

1FF, SATE-2008, 1 mark.

- IS 48. The reliewing simulanceus equations
  - y \_\_ \_ \_ \_
  - x = 2y + 3x 3
  - = 4y = 0.7 = 5

- i (fix) in the a unlesse so (\$ on for \$ cotal fo.
- on 3
- 121.0
- ter; \$
- :: =
- [CE, GATE-2009, 2 marks]
- Q.45 For offmalate of a frama visit of polytopic system of polytopic in a relative property of the

  - Michael County (1800)
  - 5 i 1
- . (d) The tale he such value

[ML, GA L 2009, 2 marks]

- Q.50 Tiesystem Literature des
  - 4x + 3y + 3
  - 2s v = 5

tra

- ía! a un que acitika
- doine solocar
- (c) en in into number el socitor si
- Altress alle ten disindi solutional

JEC, GAIE SCOR, 1 mark)

Ola I in a bloomy excensive could be 8

$$x_1 + x_2 + 2x_2 - x_3 + 2x_3 + 2x_$$

.a. 14a, 14a, **-4** 

- mas a unique solution. The only describe  $\kappa_0(a)$
- de la sable.
- 150, 100
- abuighter Cler
- (d) and 6 Tull of 11
- (d) argressing thereine than 5

135 3ATE-2005 1 malki.

- **0.58** The Diges values of the matrix  $|t|^2 + \left|\frac{t-5}{t-5}\right|^2$  are
  - and 7 and 5
- to seed.
- ici Blanci4
- . . (1) Tone 2
- Barda (1. 1919)

[OE, OATE-2009, 2 marks]

CLSS I has get works softham to  $\mathbf{x} \begin{bmatrix} \mathbf{p} & \mathbf{x} \\ \mathbf{p} & \mathbf{p} \end{bmatrix}$  to without

in the form  $\begin{bmatrix} 1 \\ a \end{bmatrix}$  and  $\begin{bmatrix} 1 \\ b \end{bmatrix}$  . What is  $a \in \mathbb{R}^2$ 

- oni 3
- 1.00
- 1.5
- 1.77

[jME, CA75-2006, 2 merke].

 Gut4 I dw many ortholo dwing mané a la vez i leigen value 19

$$\left| \frac{1}{n} \left| \frac{3}{n} \left| \frac{3}{n+1} \left| \frac{1}{n+1} \right| \right| \right| \leq \frac{3}{n} \left| \frac{3}{n+1} \left| \frac{3}{n+1} \left| \frac{3}{n+1} \right| \right| \leq \frac{3}{n} \right|$$

- يان آيا
- Zaji Naji
- (c) #100
- (1) 11 12 m

[05, GATE-2000, 2 marks].

**Q.55** The metric  $S \in S \setminus G^*$  has are algebraic and let  $I = I \setminus g$ 

low the sum of the of a Headigen values is:

- Property.
- 22.10
- 200 0 -2
- Tell on or

[ML GA E 2008 | Imark]

0.56 All the lead of the 2 x 2  $\eta_{\rm B,II}$   $_{\odot}$ 

$$D=\frac{\partial}{\partial x_{0}}\frac{\partial}{\partial x_{0}}\frac{\partial}{\partial x_{0}}$$
 are nonzero, and one of mages

values altero. Which is the lattering state  $\mapsto$  is take?

- $10(1.5_{11}) \Delta_{12} + \Delta_{12} \Delta_{2} = 1$
- $(0,p_1,p_2,\ldots,p_n,p_n)=0$
- $B((\mathcal{F}_{1}, \mathcal{F}_{2}), \mathcal{F}_{2}) = 0$
- $(0)_{i=1}, i_{i+1} = 0, j \in \mathbb{N}$

[EG, GATE-2008, 1 mark]

Q.57 The tink at teristic equation of a (3 x 2) matrix Pts Identifies

$$u(\lambda) = \left[ 2^2 - \lambda u \right] + \lambda^2 + \lambda^2 + 2\lambda + 1 = 0.$$

To surpose reportly metro, than the inverse or a strik Sicility

- $(c) (dF^2 + C + D) = (c) (C^2 + c) + (c)$
- $(0) = (\lambda^{\frac{1}{2}} + \lambda^{\frac{1}{2}} + 1) \qquad (\lambda_1 + (\lambda^{\frac{1}{2}} + 2) + 2i).$

G-56 Awylese Habita Bird Disclosur commontal II

- $(\mathbb{Q})^{-1} \otimes_{\mathbf{A}} \cdots =_{\mathbf{D}}$
- $-(1-\delta)=21$
- (c) B = B
- 818 P

[SF [SATE-2009, 5 merk]]

**Q.59** For alm 2.7  $(G) = \begin{cases} \frac{3}{5} & 4^{\frac{1}{5}} \\ \frac{3}{5} & \frac{1}{5} \end{cases}$  , the first space of the

with the converse converse of the matrix,  $[M]^{n}:[M]^{n}$  . The value of x is given by

$$db_{1} = \frac{\Delta}{4}$$

ú: 3 ú: 1

$$\{J_{1}\}_{i=1}^{d}$$

[ME, GATE 8009, 1 mark

Q 60 The trace and determinant of a 2 × 2 million are written to the P and Historia partitiony in expensions are

- (b) (10 and (c)
- ist) de troc la
- (v) /a c t
- no) 1.15 and 12

FF, CA75-2009, 1 markt

Oler The eigen adhes in the reliable productive ele-

G.82 the inverse of the matrix  $\begin{bmatrix} 1 + 2t & t^{-1} \\ 2 & 2t \end{bmatrix}$  is

- $[40 \quad \frac{1}{2} \quad \frac{3 \cdot 2^{2}}{3 \cdot 3^{2}}]$
- $(t) = \frac{1}{2} \begin{bmatrix} 3 3 & -1 \\ -1 & 3 + 2 \end{bmatrix}$
- $q : \frac{1}{4} \begin{bmatrix} 3 + 3 & -1 \\ -1 & 3 \end{bmatrix} \begin{bmatrix} -1 \\ 2 \end{bmatrix}$
- $\frac{1}{2} \int_{\mathbb{R}} \frac{1}{14} \begin{bmatrix} S_{1} \cdot S_{1} & -1 \\ \vdots & J 2i \end{bmatrix}$

[CE, GATE-2010, 2 marks].

O.63 Forth appropriation and services.

- $A_{ij} = \{A_{ij}, A_{ij}, A_{ij}, A_{ij}, A_{ij}, A_{ij}\} = \{A_{ij}, A_{ij}, A_{ij}, A_{ij}, A_{ij}, A_{ij}\}$
- 3a = 3a,  $2a_1 + 12a_2 = 0$

riedofowing statement is loter.

- (a) Any the trick of higher than the property of the position.
- abili Indio are ne solation.
- tet Auggebegebisia selukusasse.
- in Martine maret isia balla che aziat

EE, GALE 2013, 2 minks).

മുള്ള സ്ത്രസ്പ് ഉക്യപ്പാക സംവിധാനിൽ മാ

| MF, GATE 2010, 8 marks|

© Gorge (Ar serie o P − C. 2. 2 | S

[BE, GATE 8010, 8 marks].

© 68 the diger values of askerty of unit in the life are:

- $\mathbb{W}_{p}^{2}$  always 20.5
- (a) Cways durei regine yi
- ; A is in mosto el pure magnesty.
- i [FC GATE/2DIO I mark] (ст. діжаўкая генті

Q 67 Cordica Horolewnams, K

$$\mathbb{E}\left[ \begin{bmatrix} 2 & 3 \\ 3 & 3 \end{bmatrix} \right]$$

, the agenvalues of Award at Jily India

$$(30.4 \pm 4)^{3} - 10^{3}$$

$$(y) + \mathbb{E}[A_{-y} = 10] \qquad (B) := (a, b + B)$$

$$\sin x = 2, x = 5$$

$$\langle (g), v \rangle = -i \cdot y = 10$$

[CS, GAIL 8010, 2 marka].

Cl68. Considering to towing system (1 + pie ils 6).

$$2a_1 + a_2 + a_3 = 0$$

$$\chi_{\lambda} = 2 \pi / \pi / f$$

$$\cdot \quad + \quad z \rightarrow 0$$

This evaluation has

- เซา อนาเมืองสามโคย
- ந்த நடித்திரண்
- i de sin orber alsa chossi
- (1: fly: bolin ths | [MC, GATE-2011, 2 me/ss].

Q.50 Indisystem of the artists

$$\begin{aligned} & \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{p} + \mathbf{z} = \mathbf{\hat{z}} \\ & \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{f}_{\mathbf{y}} \cdot \mathbf{r} \cdot \mathbf{f}_{\mathbf{z}} = \mathbf{r} \mathbf{r} \cdot \mathbf{r} \\ & \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} = \mathbf{p} \end{aligned}$$

has MG calcoon, or oakles of Alanching wat by:

$$\langle \varphi_{ij}^{(j)}(i) = 0 \mid \varphi = 20 \rangle$$

$$0.65 \ \lambda = 6.00 \pm 20$$

$$\frac{1}{2}$$
  $\approx 2.3$  20.

ED, GATE-2011, 2 n e(\*).

Q.70 Figer writes on a real symmetric inclusions

- ing and live.
- վիլ բայենան
- itali ne-ili
- (d) complex

[MF GATE-2011, Line/k].

 $Q_{\nu}(f) \otimes_{\mathbb{R}^{N}} s_{\nu} \mapsto \operatorname{th} \operatorname{attnifts}$  as given by each

With the electric latewing colors provides the CHRRECT AND ESTATE HER CONTROLLES OF THE

- 16 1 42
- tan 10 ft 2
- Phr 5, 7, 8
- 16; 7, 3, 2,
- $2.0 \pm 2.5$

[CS\_GMIL\_SC11, 2 merks]

0.72 . ഉളപ്പെടികൊണ്ടുന്ന  $\left[ rac{0.17}{0.18} 
ight]$  ഈ

- Mr. 5.42 april 5 bb.
- 203-34M 342
- 6 ( 4 70 a vit 6.86 )
- (b) to by any 9.5%

TEF, RATE 2012 2 marks]

Q(73 + 4.2) - 2 = 62x + y = 2x + 5

They  $a_{yx} = 1$  an elgentrate gradult by  $a_{yx} = 1$ 

- gg grungge galach Yizh I. ghill a'd zwill
- ( given by locative about the leaf (y=1,y=1,2=0) $\pm 0.00$  and  $p \sim 0.7 \pm 0.0$
- par initial a number of estate of es-
- ty souther dain political.

[MF, 8,475-2012, 2 marks].

② 74 Feir Alfacitte Cox 2 moduk with ᆗa Meth

$$-\mathbf{a}_{11} + \mathbf{a}_{12} + \mathbf{a}_{21} = *$$
 and  $\mathbf{a}_{22} = 1$ 

Then the digan values of the holds  $A^{17}$  are:

- (9) 1 J M 4 V J 4 1004
- (b) 1526√2 2011 -4664√5
- (6) 43/9 813 43/2
- (a) 510-65 90 / 1512 / 1

199, GATE-2012, 1 markal.

COPS For the matrix  $\Delta = \left| \frac{t - 2}{1 - 3} \right|$  . This of the normalization

э дол үссірге івіділя (вій.

$$\begin{array}{cccc} & \frac{1}{2} & & & & \frac{1}{2} \\ & & & & & \frac{1}{2} \\ & & & & \frac{1}{2} \\ & & & & \frac{2}{2} \\ & & & \frac{2}{2} \\ & & & \frac{1}{2} \\ & & & \frac{2}{2} \\ & & & \frac{1}{2} \\ & & & \frac{2}{2} \\ & & & & \frac{2}$$

[ME, GATF-9019, 2 marks]

Q.7B G vertical

$$A = \begin{bmatrix} -\theta & -\theta \\ 2 & 0 \end{bmatrix} \text{ and } \theta = \begin{bmatrix} 0 \\ 0 \end{bmatrix}.$$

the value of to

- (0) : 5A + 12i
- (f) 0.4 + 50.
- tot 17.4 ± 150
- (c) 75 + 5 T

[FC: FE: IN GATE 2010, 5 marks]

Q.77 There are three many key  $\mathbb{N}_{4} \times \mathbb{Z}_{5}^{n} \otimes \mathbb{S}_{5} \times \mathbb{A}_{5}$  and  $\mathbb{S}_{5}(1 \times 1)$ . The intermediate multiple is joint council to compare the major PORTS.

# [CE GA E 2018 1 Ve/k]

Q 78 Het Albeitan to sime richard programments. It like give the contact districtions if  $(u_{\infty} + AB)$  in of Albeitan at  $(u_{\infty} + AB)$  where  $v_{\infty} \times constants$  described and the single program and the described at the contact of the contact of

 $\mathbf{Q}_{0}/\mathbf{Q}$  Which are of the totaching data NOT equal

 $Q(\theta\theta)$  The dimension of the highest a>2 the matrix

CLB TOTALS # THE CONNECTION CONTINUES, with its average early dependent

- (c) single the condition is
- iffo 6.53 ± 8 me a el tar
- (A) A is An embraca closed a
- . (เ) สงยอก ราบเกาสาราช -

[MF, GATE-2013, 1 Mark.]

Question and 
$$\begin{vmatrix} 2 & 2 \\ 1 & -1 \end{vmatrix} \begin{vmatrix} x_1 \\ y_2 \end{vmatrix} = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$$
 we like the section

- ук. 113.95 д. 711 -
- (b) shy in expeller  $\begin{bmatrix} a^2 & 0 \\ b & e^0 \end{bmatrix}$
- (a) in a Every unique solution.
- (q) foulfile fact in a [FF, CATE-2013]. Work

9.80% expandinger varies as expanding to he

Here is given it is always to the matrix 
$$\begin{bmatrix} 0 & -1 \\ 1 & 1 \end{bmatrix}$$
 is

(a) 
$$\begin{bmatrix} 1 \\ -1 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$
 (b)  $\begin{bmatrix} 0 \\ -1 \end{bmatrix} \begin{bmatrix} 1 \\ -1 \end{bmatrix}$  (c)  $\begin{bmatrix} 1 \\ -1 \end{bmatrix} \begin{bmatrix} 0 \\ -1 \end{bmatrix}$  (d)  $\begin{bmatrix} 1 \\ -1 \end{bmatrix} \begin{bmatrix} 1 \\ -1 \end{bmatrix}$ 

[IN, CATE-2010 : 2 marks]

- **Q.84** The digraphs at a symmetric region  $g \in \mathbb{N}$ 
  - itat latet plito kai linni erena susa, voi mapino yida. Sh) o engles sol, ili sur zaro nogat kolima greny gar.
  - ici real
  - kry puro ratginary.

[ME, GATE 2018, 1 Mark]

G.85 A months has eigen values -1 and -2 ,  $\Pi$  = consecrating eigenvectored  $\begin{bmatrix} -1 \end{bmatrix}$  and -2 ,

$$\begin{cases} 1 & \text{if } \\ 2 & \text{otherwise} \end{cases} = \begin{cases} 1 & \text{if } \\ 2 & \text{otherwise} \end{cases}$$

$$\begin{cases} 1 & \text{if } \\ 2 & \text{otherwise} \end{cases} = \begin{cases} 1 & 0 \\ 2 & \text{otherwise} \end{cases}$$

FE, SATE-7313, 2 Marks

QUBB Thomation open waters the left wing start also

O.87 Hoto modes  $|A|_{\mathbf{k}=0}(E_{n+1}, |C|_{n+1}, |D|_{n+1}, |H|_{\mathbf{k}=0})$  and  $|A|_{n+1}$  are given. Matrices |B| and |A| are symmetry

Hallowing statements are made with respect to these matrices

- . Matterprotects  $[a,b] \in \mathcal{C}^{-1}(S)[[a,b]]^{-1}$  is a scalar. So the dependent  $[D]^{-1}[S]$  . So the  $g_{S}$  -year field of the reference to be even statements. An one of the reference sets S
- (4) Sistement 1 is true on, 1 is take
- (a) Siave led divideas an Silvinie.
- (er Bolo # o ficiements a la fue-
- for poth the statements are to ac-

$$Q_100 \in S_{20}$$
 the letter  $y = \begin{cases} 0 & 2 & 1 \\ 2 & 4 & 2 & 3 \end{cases}$   
 $\begin{bmatrix} 2 & 4 & 2 & 3 \\ 2 & 6 & 3 \end{bmatrix}$ 

[OE GATE-2011 : 1 Mark);

© 89 Withhelp eight of the proventione Contests (x,y) are suitable water in the variety of in triangle have the following location rates:  $(x_1,y_2) = (1-2)y$   $(x_1,y_2) = (2-2)y |_{X_1} |_{Y_1} = (1-3)y$  The wisk of the view  $x \mapsto y \in Y_1$ .

[CF CATE-2014], 1 Mark

**Q.SC** Which one of the rollowing rollow, one is a concept if  $S_{n}$  by  $\Gamma_{n}$  with a  $\gamma$  3 is Substituted that  $S_{n}$  C and  $S_{n}$ 

$$A(1, P) = A(1, P) + A(2, P)$$

- $f(y) + P = (y)^2 + P^2 + P^2(y) + (y^2)^2$
- (c)  $\operatorname{den}(P \cap C) = \operatorname{del}(e \cap \operatorname{det} C)$

Q.3h. Which have so the relieving since to all r , after

- A literal numbrate to materiologic
- ist Afthe agency cas are red.
- ा∫ो की महत्रम्य को स्थल स्वान्थांक
- ül, elike onduksi esitendataa
- (di Numbrial The ate on ya ucaka besis

[DE\_GATE-2014 : 1 Mark]

**Q.92** The valides of same shorth  $M_{\rm c} \approx 1$  and  $m_{\rm c} \approx 1$ 

- A Webbeddi
- $(0) (1)^{2^{n+1}} = 12^{n}$
- (15)(35) = 0.56
- $\mathbf{u} \in \mathbb{N}^{d} + \mathbb{N}^{d} = \mathbb{N}^{d} + \mathbb{N}^{d}$
- with AWH AWY IES, GATE S014 : 1 Mark

2) 38 Which and of the following statements is NC Fluxed following as a strike AP

- (ii) nel auppromentular, fro e generalice distribute della sette di acceptatione.
- (c) if Albinous symmetric, the eigenvalues of  $\lambda_1$  are always realistic is  $0.66 \times 3$
- ne! If Alis rela, the organization of Alia d.Ali are above integral
- (d) Let the principal introduction action and the open values of the disopestive

(FC, QATF-2014 / 2 Marks)

$$0.54 \text{ The automation constraints} \begin{bmatrix} 0 & 1 & 2 & 2 \\ 1 & 6 & 3 & 1 \\ 2 & 0 & 2 \\ 3 & 3 & 3 \end{bmatrix} , a_{--} \ .$$

[OE GATE-2014 II WARD

36

 $\mathbb{Q}(90)$  indicated minimum at mall  $i_{\mathcal{A}}(A)$  is S when d=Here if with the bound State of the appointment of strie 475 sc

(FC: CATE-2014 : 1 Mark);

Q 97 indingeramya ta aliha dare mina isan ng ali  $4 \times 0$  less by the term of hidsections fraction  $14 \times 10^{-3}$ [00 GAIL 9014 | 2 VArks]

U 98 inche matrix 4 is sie Liber

1925 had sherri sa bid Als equal  $\omega_0$ [CS] GALE 2014 I Mark I

(CF, GATE-2014 : 2 Marke)

Ülf 20 feet mear see Aland Hin big will steike.

$$\Delta = \begin{bmatrix} 0 & 0 \\ 1 & n \end{bmatrix}, \ B = \begin{bmatrix} a^2 & b^2 & bc + ac + ac \\ b^2 & bc + a^2 + a^2 \end{bmatrix}$$

知 his lack or moins A la Al tron in a la cult па ік 5 г.

(a) 
$$\frac{N}{2}$$
 (b)  $N = 1$   
(c)  $N = \frac{N}{2} + \frac$ 

QUICT Greek biovalors of cauchors.

$$\begin{array}{ll} x+y+2x+3x+5, & x\\ 5x+y+3, & x_2 \end{array}$$

Mind of the idiplying is this regarding the 65-1, 21

- (a) The exact in tractial unique solution for any great all all de
- (acilifa systemas havo intrivier la ly cilitare) for any given or and  $\omega_{ij}$
- 15). Amod thioring, also unenexiste destination. e given fill and dy
- (A, TV beson would are in white in any values on all and sill

ILL, SAIL 2014 II Merkij

Q 102 The system of the arequations:

- Anthri Hymaniyad Liday
- (c) he soull on
- (d) chasty let of utors.

TEC: 9/010-2014 | 2 Marks I

Q.100 Crus da Tie Muzingswaar Lideopa, 999

$$S_{+}=2y=1$$

$$4a = 77 - 1$$

$$x+x+z=0$$

$$\mathbf{v} = \mathbf{\hat{z}}_{-1} + \mathbf{\hat{z}}_{-1} = \mathbf{1},$$

Branch Section and the Latine Assembly

IC-3, IGATE, 2014 : T Mark.

where 
$$|G| = \begin{bmatrix} 916, & 640, & 996 \\ 655, & 151, & 336 \\ 93, & 246, & 441 \end{bmatrix}$$

- 2000

- المراح الازا

10E. CATE-2014 | 1 Mark)

O.135 Convide A Six 3. As also hear of extrining #2 #2 Interport of the expension that are  $a \in \mathbb{R} \setminus A \neq 0$  with

6.6666, valeiga (valida) 
$$\begin{bmatrix} 0 \\ -1 \end{bmatrix} \begin{bmatrix} 1 \\ -1 \end{bmatrix}$$
,  $[p] = 1$  and  $[p]$ 

 $\pm c n \omega (y_1 + y_2 \lambda_1 + z_3 y_1) c q d a b$ 

- $(\varphi_{i}, \varphi_{i})$
- њ. Б
- الحار في
- ich L

[MF, GATE-2014 | 1 Mark1

**Q. ID** Und distributed sense of the  $a = a \begin{bmatrix} -5 & 5 \\ -9 & 8 \end{bmatrix}$  is

Q. 107  $(0.898) \to 0.000$  in (0.8) ) van to latewe.

policy also also have the maximum ≓ jer wike intomn mimogor-wud s\_

THE GMT 2014 2 Verkal

() 108 & fot (4 va) munu in salation the equal (4)  $\Delta = f$  wipers the  $f \mapsto (d \times b)$  conday  $\exists c d d s$ . For positive angent with 5 M Alfordament

TEC GA 1 2014 : 1 Mark).

्र 1001 for the orthodolphodolte! रे सम्युक्त एक स्टब्स concessorable, at any near of discrete classes wages of which is summation positive details. 104 K & . \_\_

[[06] GATE-2014 : 1 Mark]

 $\mathbf{q}_{i}(\mathbf{q}_{i})$  by  $\mathbf{p}_{i}(\mathbf{p}_{i})$  ,  $\mathbf{q}_{i}$  is the same eigenvalues with  $\mathbf{q}_{i}$ Tala-

[CS, GATE-2014 | 2 Warks].

- $2 \cdot 111 \cdot 279$  , we obtain the composite terminals in  $1.44 \cdot 1.4$ about every assumption will be by 48 digitary higher a car from trace of the matrix is passible and the ดดวลทางกระที่ ดีเขียงตาม. พ.ศ. 1939 เคล (ค.ศ. 21<sup>1</sup>ค. 2) and of midger valued in legalism
  - $\hat{q}\hat{q}$  . Then have of the matrix is positive, s' is: vigen vituet me pochvol
  - $(\phi^{-1}, \phi^{-1})$  the transformation to the unable is positive. Allity experiences are positive.
  - (y) If the parelless of this trace, and decoming to y'r ein ei is o chailbh, a'i la egos wlaer gre positive.

[CS, GATE-2014 | LWark]

$$\label{eq:continuous} 0.112~{\rm Geography} \approx 4.6~{\rm cm} \, {\rm throughput} \, {\rm cm} \, \frac{2.5~{\rm Geography}}{9.6~2}$$

preinter, hangail, wifen one of \$10 following size focas regarding the refer of  $\Gamma/2$ Alexandria della LC 12.

- हुत्। Adsalute va qeremene in changad bursigni
- (a) Fair Mwalda ya utiang signini dina iga
- gar Absoluto edus willel enge en kigo Williom
- ign go, i sheer te established righ to horizan. residences.

ME\_GATE-2015 . 1 Mark.

Out 13 Part and the policying operations at the exerci-

- Addition produces to the second low.
- g (debag) te mera abuma mem tre fot
- The gote mingrition that seek to increase to

(CS, GATE-2015) P Marka).

$$Q = (4 \operatorname{For} (4 + \frac{1}{1 + \log 4})^{-1}) + (4 \operatorname{constraint}) = 0$$

- (a) bettil On cap4a
- 150.00 100

JLC, GATE-2015 : 1 Mork a

Q 113 Tempher metric 
$$S = \frac{14 \cdot 3}{16 \cdot 3} \cdot \frac{3}{16 \cdot 3}$$
 where

 $_{1}$  =  $_{2}$   $^{\prime}$   $_{1}$   $^{\prime}$   $^{\prime}$ 

$$\frac{1}{(a^2-ba)}\frac{1}{(ba)}$$

$$10 \left( \frac{1}{24} \left[ \frac{1-24}{1-4} \left( \frac{1}{1-4} + \frac{1}{1-4} \right) - \frac{1}{1-4} \right) \right]$$

[MF, GATE 2015 ; 2 Marks]

Ginté ber Air 
$$[x_{i,j}], i \leq r_i \leq n$$
 wi

 $n \cong \mathbb{A}$  and  $a_1 := a_1'$  through  $a_2 : A \ni A$ 

is−; U

246

- atria d
- $\mathbf{u}^*$ :  $\mathbf{u} = \mathbf{u}^*$
- 1017

[CD GA E 2015 | 1 V m v].

 $\Omega_{\rm eff}$  ( ) in what we do also be following solid options with will law no solution a

- Qinnê We have a sonat Silin Her equal ons in X ый экиль Мерборосс Коло Манан роздор. switches bewind with Minnaya Marie, Margington AALVAA ES Alegje (S.)
  - for 66 diangly, get.
  - dequations a street yill dependent.
  - 의 한 9ger volctsp"#brnallnia , g<sub>e</sub>glygrg
  - z=10 action is a Ly',  $\omega$  double-commute z

Sent hand a life releading is TP , 79.

- (ii)  $\hat{\Gamma} = \hat{G} = \Gamma \cdot \vec{G} = -i\Gamma \cdot \hat{\Gamma} \cdot \hat{\Gamma} = \hat{G} \cdot \hat{\Gamma} + \hat{\Gamma} = \hat{G}$
- $(p_1,p_1,\ldots,p_{m+1},\ldots,p_{$

[BEIGME-2015 1 Mark]

O 119 Carix rena system of theoris sugmit all

have up of the relief the gostom near made y. ingge set de die i

[E0, GML sci 5 : 1 Mark]

GLISE Mita tallowing vystym neo nanictvih isouricing

$$2x + 2y + 6z = 0$$
$$2x + 2y + 2z = 0$$
$$2x + 2y + 2z = 0$$

 $P \mapsto \mathcal{M}(\mathcal{M})$  at odd  $\# \mathcal{M}(\mathcal{M})$  where  $\mathcal{M}(\mathcal{M}) \in \mathcal{M}(\mathcal{M})$ 

- (9) of  $\mathbf{q}$  if  $\mathbf{r} = 0$  or  $\mathbf{g} = \mathbf{r}_{\mathbf{q}} = \mathbf{r}_{\mathbf{q}}$
- $(\mathcal{C}^{*}(G) \cup \mathcal{G}^{*}) \cap \mathcal{C} \cap \mathcal{C}(G), \quad \varphi(\mathcal{C})$
- (a)  $\phi \in \mathcal{L}_{0}$  if  $f \in \mathcal{C}_{0}$  if g = g = g
- $(0) \ 0 \quad \forall + 1 \quad (1) \ y = \ y = \ 1$

(CS, GAIL SDIS 12 Valky).

 $\Omega$  121 Let  $\alpha$  be an experienced matrix  $\alpha$  $T\mapsto Ax$  . They emdependent so that x of engineering

dá.

- . A. A.
- 121 7
- trá como office and

TR, GALE 2015 : 1 Werkin

QUISS Indiamaies, and la gost urganisticies ni Hel Істамир пакажына

- 100 1 5 Apr. 35. (5) C.S. and 2.3
- ico il anul 30 💎 (di 1,0 vine 20)

ICH CATE-2015 : 8 Morks

Q.182 the locate eigenvalue of  $z \in 2 imes 2 imes 2$ 

[Me, IANIE-2315 - 1 Mark]

Q 184 The value of a such two in the set in 
$$\begin{bmatrix} 2 \\ 3 \end{bmatrix}$$
 (also the figure value of the matrix  $[A,A]$ 

IEC, GAIF-2015 - 1 Mark?

 $\Omega$ .785 the larger character. Here we pay the right x

ICS, GATE-2015 : 1 Mark I

eigen values in I. The high lyggigns. companies in a decagen value of

- (0.1, 0.84, 2.0)  $(0.6 \pm 0.6)$  (-2).
- the set 4 25; will die 6 Mil.
- 10.145(82, 0) f(1) + 10.1 = 80
- $10 \cdot (-\infty) + \sqrt{2}, 0, 1 \cdot (-1) \neq (0, 1 + 2^{n})$

[C3, GARP 91, 51, 1 Mark].

Q 127 The woll as the action from a  $\frac{1}{1+2}$  have

a ratio of Cold for the Harl What is a not encerne shots tendicte Eigenvalues have the same raho od 3 ili 191

- 125 2
- $0.1 \, \, \, \mathrm{GeV}$
- 10 ( 47

(CE, SA) L 20 to : 2 Markst.

ULISB At Carl on Keyer where the right in direct

- reti pestinati
- ñ i me dad-ci
- edi imaşine yı

[ME, GA = 2015 . I Mark.]

25 The revinue region of a such that the matrix.

teal dişan və ninxik

[EL. 35 ± 2015 | 2 Valks].

G.180 The wife of vital when bit the green squeet of. मेट माजा ८५०मा अभीका बन्दा बनोह

$$\begin{bmatrix} 10 & 5 & j & 4 \\ r & 27 & 2 \\ 4 & 9 & 10 \end{bmatrix}.$$

IFO (84TF-9015 ; 1 Mark)

© 101 Consider the lattering Platform in April engine old herealare unknown and are melleng galaxy gr hu eigen callies tollèls i tsu's que =1 an jile. Ving. sue lite values et a encit #

- (7) 6 6, 6 = 1 (9) 2 = 4 + 5 = 6(8) 6 6, 6 = 5 (9) 6 = 6 + 6
- \_\_\_ਰੀ(a=5 5 = 3

[CB, GATF-2015 ; 2 Marks].

Qui 82 Airea victori e medi e a signi de eksen summi 14 si

- $|\mathbf{H}_{i}^{k}||\mathbf{H}_{i}^{k}=\mathcal{F}_{i}^{k}|$
- $(b) \ \forall i = \emptyset.$
- 14.) A<sup>2</sup> —A
- $|\psi_{1}(\Delta)|=z_{1}+\Delta^{2}$

(MF, CATE-2016 | 1 Mar d)

Q 1931 et  $M^2 = \hbar$  (where Approximates the Legacia matrix).

- መርራ የአምር የተችሎ መስከር የአ<sup>ን</sup> ላይ ጠቂክ በያነው እ
- ration in Leak Milegraps
- 7.0 5417 2
- for garden
- 741.3.118

TEC: 0ATC-2018 | I Mark)

and task while 14. The value of 16 = 16 is

§DD: CATE-2016 : 2 Marks [

Outdailer Albanie N.S. da mai Rie Hibrig A. Willen. this of the rollowing statement is likely a

- (4) Park i LAM 9 958 , gr 2
- (c) Parket AfAils For Mits 2
- cal Bank at ATA is among 1 or 12
- Styl Bank of the Charles any number eastwire Teach D.

JEF GATE-2016 2 Merasi.

 $\|\Delta_{i}(20L_{B})\|_{L^{2}(\mathbb{R}^{3})}^{2}$  standing the an order  $\omega$  is  $\kappa$ 

$$\begin{pmatrix} r \\ r \end{pmatrix} \approx r^{\frac{1}{2}} \text{ then } r^{\frac{1}{2}} = 0 = 1 \text{ and } r \text{to } \frac{r(q)}{r(q)} = p^{\frac{1}{2} \frac{r(q)}{r}}.$$

- (a) a pira a compatua (e.g.
- $\frac{1}{1 + \frac{1}{2}} = \frac{1}{1 + \frac{1}{2}} = \frac{1}$
- (3) and the will inspect an eq. (2)
- (c) an elipse with numerous along

[EE G5] = 2015 ; 2 Warks]

Q 137 II the wirth a(a, -1) = 0 (2),  $a_0 = (0, -1, 0)$  and  $\phi_i = (i-2, i)$  (1) for  $\phi_i$  in the graph is a set of the If we dimensional recippose  $\mathbb{A}^2$  , from the section  $p = (r + 2 + 2) + 2 \cdot r + 3 + 4 + 4 + 4 \cdot r + 3 + 4 \cdot s$ 

$$(33.44) = -\frac{2}{5} a_1 + 3a_2 + \frac{11}{5} a_1$$

$$|\gamma \gamma|/2 = -\frac{6}{6} \gamma_1 - 3 \gamma_2 - \frac{\pi \alpha}{6} \beta_1$$

$$(0, \frac{1}{2}, 0) = -\frac{2}{\sqrt{2}} \frac{1}{2} \left( -\frac{1}{2} \frac{1}{2} + \frac{1}{2} \frac{1}{2} + \frac{1}{2} \frac{1}{2} \right)$$

$$(d) : \mathbb{R} = \{ \frac{1}{2} \in \mathbb{R}^3 : |\frac{1}{2} \otimes_2$$

EO, SAIE 2015 : 2 Marks

Q. .26 Cor vicer the latewing thickness term

$$\gamma = {}^{n}y + 2 \quad , \quad \omega$$

$$\Delta x + S_T + S_T = 0$$

$$5x - 20x - 0x = 6$$

This system is sensistent that ever one early? Insappelia.

- (a)  $(x_0 + y_1 + y_2 + y_3) = (1 + y_3 + y_4) + (1 + y_4)$
- (c) 2a + b + c = 0 (c) 4a + b + c = 0

"Сц. САТЦ 2018 : 2 Marks".

Quide Die schiron to the section of equations is

$$\begin{bmatrix} x & y \\ y & y \end{bmatrix} y \begin{bmatrix} y \\ y \end{bmatrix} = \begin{bmatrix} y \\ y \end{bmatrix}$$

- (a) B 2
- (a.) 44 % (a.) 6, − 6
- (a) 6, 7

ME GA = 2016 : 1 Mark

- O 143 Consider the systems, each consisting or mi linea en latéa xilla de labres.
  - In the state that all and systems have a
  - Tit. If all view than horse of these systems has be \$9.00
  - If first the flag there exists a system would has a saullon

Which end on the lattering is COPRECTY

- $g_0^{\prime}=-2000$  H  $_{\odot}$  > 245
- (a) Day on all liberation
- for Low Head and
- (a) None of them is the

[OS, GA1E-2016 : 1 Mark]

元 141 http://mtcs/inicachicolumno.ipikaua emetra Magazing (yi) inggrapagan kabelid %isi

37.

- 3.3
- ; á 3

[DE\_GATE 2016 : 1 Mark].

 42 Condication of reliable thevery are near safety. egga to fillight of 22 - erri 2001 which is

TEE GATE-2018 11 Mark!

 $Q_i(x) = e^{-ixt} f(x) + e^{-ixt} f(x) = e^{-ixt}$  (so since

$$\max_{i \in \mathcal{S}} \mathcal{A} = \begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix} \text{ where } i < i \text{ where}$$

- $\phi \in \mathbb{R} \times \frac{1}{3}$

- $\frac{1}{(2p+p+1)} = \frac{1}{(p+p+1)}$

IME, 0A75-2016 | 1 Mer 41

Q.144 Concillatory and experience

$$\mu = \frac{a - c}{|\phi| - 2\pi}$$

g∺gggy grupgen [i the ercennel exict the notific 4 allows (pot and (prince), from a sequel

- (41 j):
- 101 M
- 121 : : : : :
- **3**: w

(EC, GATE-2018 - 1 Mark)

Q 145 Голуудыг цагна оба ба 3 окы 1977 ж. Б. С.

 $\mathbb{C}_{\mathbb{R}^n}\sqrt{-1}$  and  $\mathbb{R}^n$  for describing the z \_\_\_\_\_\_. 108, 9A15, 2016, H. Vark).

- $\Omega$  146 Could be allowed the invariant symmetric  $t=\Delta \omega$ with initial conditions  $\rho(0; \mathrm{st}) = 0$  . Suppose  $\omega$ and it are eigen vectors of (2,8,2) induce  $\phi$ normas sending to dispress agent salues  $\lambda_1$  and  $\lambda_2$ respectively in non-line response in (iii of mesystem due to in helicond for  $\mu(0) = \sigma(0)$ 
  - jan sek<sup>ara</sup>
- (at  $\delta^{(a)}$ b

 $(x) = \frac{1}{2} \frac{d}{dx} (x)$ 

 $- (\gamma_1 + \gamma_2 \alpha + \beta_1)^2 \beta$ 

"EE, CATE-2019 - 9 Магкы].

QCAMP e equicamentary in a sistema-Switting divisions and hydigen bury Than tra e que valuas ana e gen vectors contac in all  $n N^{2} = 3.0 \pm 47$  would necessary eq. co.  $\begin{array}{c} \phi(x) = 14(x_1 + x_2 + x_1 + x_2) \\ (x_1 \ge 0, x_1 + x_2 + x_1 + x_2) \\ (10, 13A + 2010) \ge Marks) \end{array}$ 

Ot 148 The number of a pally medical descendent ergon vectors

class 
$$A = \begin{bmatrix} 2 & 1 & 0 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$$

# (MF\_CATE-2016 + 2 Ms+k-)

C 140 Tirk salivi et alla cottenitta malda.

[EC] GA 5 2016 [1 Mark]

Q 150 Crack the limit is 
$$A = \begin{pmatrix} 2 & 1 & 1 \\ 2 & 3 & 4 \end{pmatrix}$$
 where 
$$(-1, -1, -2)$$

alger kalussia all i i sino ta i nor i habe ch ρου — (5.2 % j.-)

IN GA1E 2016 ; 2 Marks.

Q.151 (upplied not belegative tax of nation Alae)  $f: X \to \mathbb{T}$  is determined by the L(4,197) is

.03 3ATE-2019.1 Martij

CL152  $\triangle$  3  $\triangle$  3 models to such that,  $A^2 = M^2$  for the digital ya ute o if lord.

 $(e^{i_1}, \dots, e^{i_n})$ 

655 1 0 5 4 W 866 11 0 4 90 865

35 ( 07 986), 03 0386

## [FF\_3ATE-2013\_1\_Mark1

Dutail A sequence unablished as i

$$\frac{|x|g|}{|x|g|^{2}} = \frac{1}{|x|^{2}} \frac{|x|}{|x|^{2}} \frac{1}{|x|^{2}} = \frac{1}{|x|^{2}} \frac{|x|}{|x|^{2}}$$

The main conditions are  $\mathbf{v}'[S] = \mathbf{v}_{i} \cdot \mathbf{v}'^{-1} = \mathbf{v}_{i} \cdot \mathbf{v}_{i}$ |d|g| = 0 for  $c \in \mathbb{C}$ , the value of  $a \cdot 12 | \cdot g \cdot \underline{\phantom{a}}$ [EC: GATE-2018 - 2 Market

Q 154 Let A be in A and set so the symmetric

Table Contains  $\rho(0) \sum_{i=1}^{n} N_i P_i^2 = 0$  . Consider the following clutements.

Charagemeatismus. Let 1 [1815].

II. 7 egga kabawi ibalagak magii da missipa si lety or verdinan Su

Which on the above claimments about eigenrations Alektronopopeany (50 mil) 1

(x) But Harry Harry

 $-\gamma (-r_0)$  by

A. Servi

ilija) Walina i naciji

[GS\_GATE 2017\_S Marks]

O.155 Indicatement at a 2 x 2 highly \$40.1 grad a con value or indimatricis. Curve ou di cipencolue to \_\_\_\_

# [MD, GATE-2017 | 1 Mark]

 $2.486 \ \text{Canalate the matrix} \ \mathcal{L} = \frac{80.70}{70.80} \ \text{An essible pair}$ verson corresponding to a convicted at and

$$\left[\lambda_{2} \otimes \pi_{1} \times \gamma_{1} + \frac{10}{\left[\lambda_{1} \otimes \tau_{2}\right]} \otimes \pi_{2} \otimes \gamma_{2} + \left[\frac{\lambda_{2} \otimes 50}{70}\right]$$

napodraby il is value to a<sup>f</sup> <sub>N</sub> si

TML, GATE-2017 : 2 Marks1

Cl. 187 The product of down values of the neb significant

Whigh y = 0 the M wind valorable about  $\theta$ ¥ INCOORDECT?

(தி நித்த பானா மிலிக்கு மா வி. ...

gri Alagoria de come

(c) likewe ni Pilkerijizhin la totawa.

ni) Alleigeb verkexill 67 arost sumba si [MF, GALE 2017 : 8 Marks]

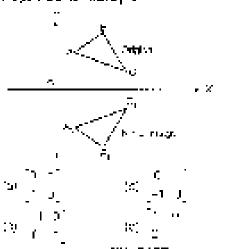
On find the expenses upon the matrix 
$$\mathbf{A} = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 5 & 5 \\ 0 & 8 & 9 \end{bmatrix}$$

$$(a) = \sqrt{5}/6$$

$$-(5) \cdot 1 = 5 + 5$$

$$173^{-1}/4 \pm 93^{\circ}$$

Q 160 The Ly visible was a step W10 one its himolimited A<sub>1</sub> B<sub>1</sub> C and less the Lorizon allex suitaacts. The coordinate Information of the Lieumage Water to ALEst, is



[IN, GATE-2017 : 1 Vark]

OutSit the object values of the hards great belonging

$$\hat{\mathbf{u}}(\hat{\mathbf{u}}(\hat{\mathbf{u}})) = \lambda - J(1)$$

[FF. GATE-2017 | 2 Merks] |

**CL. B2** I to matrix 
$$A = \begin{bmatrix} 8 & 0 & \frac{1}{2} \\ 2 & 0 & 0 \\ 0 & = & 0 \\ \frac{1}{2} & c_1 & \frac{3}{2} \end{bmatrix}$$
 Tays three grating.

1 - olgensationade omeroDk⊷igen vegtjog vilk - ol

"Viist or del translawing can be motive ritye. Vector of AS

Outaiz the rank of the month.

1.2

Q 164 Consider the s. . . 5 matrix

lt sigkan i strål skripy ore hed erjer kalje.

than the movelger while of 4 %.

150, GATE-2017 : 1 Mark1.

[EC, GATE 2017 : 1 Mark]

morner cost iner the rank et P. G s \_\_\_\_\_\_ [05\_GAFE-2017], 1 Mark] Q 187 Time annoncreate growner (a  $\sqrt{4.0} \times 3.00 \pm 4.00$  to ever Higherset of real not  $\lambda(4.0) \times 3.00 \pm 4.00$   $\pm 4.00 \pm 4.00$   $\pm 4.00 \pm 4.00$   $\pm 4.$ 

[03, GATF-2017 | 2 Merks | 1

CS 168 Let  $\alpha_1,...,\alpha_n$  be given a  $\alpha$  in the letter such that

(With portion set of the x extends of x and y

where 
$$S=\{s_1,\ldots,s_n\}$$
 and  $n=\sum_{i=1}^n S_i$  . The set

- all equations has
- a und ad solution et sieud, echa auf ad 1990s.
   a generalische stehn ind Afrik
- (g) , we see this f
- gar in limitary many solutions.
- ministrates e encora poducarea.

108, CATE-2017 : 1 Mark)

 $g_{ij}$  (69 Cape),  $\phi$  the filtraing amunancous equations  $(\phi_{ij}^{(1)})_{ij} = a_{ij}(1-y_i)$  and  $(y_i)_{ij}$  are consists with

$$3 \times 10^{-5} = 6.$$

$$|\Delta x| = \omega_0 = \beta_0$$

The expression state edge, an  $\lambda = 0.804$  some transmitting allows the

$$\mathcal{U}(\mathbb{R}^2 \setminus \mathbb{R}^2 \setminus \mathbb{R}_{N_1} \cup \mathbb{R} + \mathbb{R}) = (\mathbf{p}_1^*) \mathbb{R}^2 \setminus \mathbb{R} 0 + \mathbb{R} = 0$$

$$(4.52 \times 48 \times 5 + 0) = (6) \times (1.24 + 6) \times 6$$

FOE CATE-POINT IN MARK

Qui 70 III 
$$|A| = \frac{1}{8 + 2} \left| \text{and } B \right| = \frac{75 + 37}{18 + 4} = 43 \text{ is eq. of}$$

$$\frac{29 \cdot 38}{(9) \cdot 48 \cdot 38} = \frac{2 \cdot 40}{(68 \cdot 48) \cdot 8}$$

[CL, GATC-2017 : 2 Marks].

Q 171 The matrice of the inverse of a month of the denotes the digitive ratios which end of the deformation is applied.

$$g(|\mathcal{F}_{n}^{n}|)$$
 is an index  $f(|\mathcal{F}_{n}^{n}|)$ 

CL, GATC-2017 - 1 Warkij

Q 172 Consider the matrix 
$$\frac{1}{p^2} = \frac{-10}{10}$$
 GHz Lieuwinies

- icked in streamentals 5.3. Fire Letery 1904-09. and eigen volume of the croffs.
- (c) Upon value (in the initial data of 2, 2 d) personnel (injection of 3,5 model) of 26.
- (a) Englet, vol. et al. ex en utilit in ly a: 2, and by a nucleon section reads.
- [6] Eigenweige Sherramartal toylor 2.200 for appropriate (PHI 2007 0200).
- (d) Egyptiside 44–9 and 5, has recondecedent group and blokes 20

[CE, IANIL 2217 : 2 Me/ks]

 $(0.75 \text{ THz}) \approx 1.65 \text{ modern}$ 

$$x + y = 7 + 4y + y + 1 = -0.027 + y + 7 = 0.03$$

$$\lim_{n \to \infty} |x| \leq |x| \leq n - 2n$$

$$|(z)| = 1, \ y = 0, \ z = 1$$

$$(y_1, y_1) = \lambda_1 x_1 + x_1 x_2 + 3$$

$$100 \text{ a} = 1, \text{ } t = 2.5 \text{ } = 1$$

[ESE Platers-2017]

# Ansarers Linear Algebra

$$(-\infty)^{-2}$$
,  $(-\infty)^{-2}$  J. (b) 4. (a) 5. (a) 6. (a) 7. (c) 6. (c) 6. (d)  $(-\infty)^{-2}$ , (d)  $(-\infty)^{-2}$  (e) 12. (f) 13. (g) 14. (c) (c) a black in the limit is  $(-\infty)^{-2}$  (e)  $(-\infty)^{-2}$ 

$$(0, (6), (7), (9), (12, (6), (13, (9), (14, (6), (6)))$$
 (6)  $(4), (6), (4), (17, (6), (6))$ 

$$72.~(1)$$
  $79.~(c)$   $74.~(c)$   $75.~(c)$   $76.~(c)$   $78.~(c)$   $79.~(c)$   $79.~(a)$   $80.~(b)$   $91.~(c)$ 

$$92.~(9)$$
  $83.~(6,4)$   $64.~(5)$   $66.~(5)$   $96.~(5)$   $97.~(5)$   $89.~(9)$   $90.~(9)$   $91.~(6)$ 

$$98.~(5)$$
  $93.~(1)$   $86.~(2)$   $160.~(3)$   $101.~(5)$   $102.~(5)$   $104.~(5)$   $105.~(5)$   $108.~(6)$   $114.~(6)$   $112.~(6)$   $144.~(6)$   $145.~(6)$   $116.~(6)$   $116.~(6)$   $121.~(6)$   $121.~(6)$   $121.~(6)$ 

$$114.76$$
 112. (a) 14. (b) 145. (a) 116 (c) 116  $_{20}$  120. (c) 121. (c) 122. (c)  $_{1}$  126. (c) 127. (d) 128. (d) 128. (e) 129. (e) 129. (e) 121. (d) 139. (e) 130. (e) 135. (e)

$$198, \ 90, \ 127, \ 90, \ 128, \ 90, \ 129, \ 90, \ 120, \ 90, \ 139, \ 90, \ 130, \ 90, \ 135, \ 90, \ 148, \ 90, \ 157, \ 90, \ 128, \ 90, \ 158, \ 90, \ 148, \ 90, \ 159, \ 90, \ 148, \ 90, \ 159, \ 90, \ 148, \ 90, \ 159, \ 90, \ 148, \ 90, \ 159, \ 90, \ 148, \ 90, \ 159, \ 90, \$$

$$162^{\circ}$$
  $(6)^{\circ}$   $(100, (2)^{\circ}$   $168^{\circ}$   $(6)^{\circ}$   $(29, (6)^{\circ}$   $170^{\circ}$   $(6)^{\circ}$   $170^{\circ}$   $(6)^{\circ}$   $(79, (6)^{\circ}$   $170^{\circ}$   $(6)^{\circ}$ 

# Employedions Linear Algebra

# 1. (5)

Consider that 3 x to organs, taken made graph passible rangit Si

$$\begin{array}{ccc} |4| & 2| & 8 \\ |5| & 2| & 7 \\ |2| & 3| & 4 \end{array} = 0$$

Жин - Уир штатарсия, жы үзид mra a

Унапазитальны

$$\lambda = 2\mu + 2 = 3$$

$$22 + \frac{1}{2} \cdot 22 + \frac{1}{2}$$

Этика жазаты өті сөтірі дең де

$$\begin{vmatrix} 1 & 2 & 1 \\ 2 & 3 & 4 \\ 3 & 5 & 5 \end{vmatrix} = \frac{16}{5}$$

Augmentice matrix 
$$\mathbf{8} \begin{bmatrix} 1 & 2 & 1 & 6 \\ 2 & 1 & 2 & 3 \\ -1 & 1 & 5 \end{bmatrix}$$

Pyspales air Shafani

Supplying kind with in more a as the fork the property with any matter of a assumption and supply and the system is managered.

2 :b

The augmented many wint the groot evolution is

Parramina Gauss et tilhat andri troprovomstris-

Hyre for the first e well taken a moderatory that at least or error much to completely zero.

There is any present of submetricit fraction solution to \$48.

 $\mathbf{d} = \{\mathbf{o}\}.$ 

$$a = \frac{4}{11} \cdot \frac{11}{4}$$

Nation 
$$A' = A' = 0$$
  
Where  $A = A' = 0$   
 $A = A' = A' = 0$ 

$$\begin{aligned} & (4 - \lambda)^2 - 1 = 3 \\ & (4 - \lambda)^2 - 1 \cdot (2 + \lambda) \\ & (4 - \lambda + 1) \cdot (4 + 1) \cdot (4 + 1) \cdot 6 \\ & (6 - \lambda)(3 + \lambda) \cdot 6 \\ & (6 - \lambda)(3 + \lambda) \cdot 6 \end{aligned}$$

5. (a)

$$\begin{vmatrix} 8 & - & 0 \\ -8 & \text{diagn artists in tables} & = \begin{vmatrix} 8 & - & 0 \\ -1 & 0 & 2 \end{vmatrix} = 0$$
$$= \begin{vmatrix} 8(0 + 10) - + (0 - 2 \times 12) + 0 \\ -1 & 2 - 4 \end{vmatrix}$$

7. (6)  $x = \xi y = y^{-1}$  y = y = 2 $y = S_{F} = S$ 

> | 1 5 | | Polyacy mander manifold | 1 -7 2 | | 1 3 3 |

Utility pauss outries, or or received in 18,400 GeV.

Fig. k [A, B] = 2 (number of nonzero k ex k (A, B]). Rank p = 2 (number of nonzero p at  $P(B^0)$  = p , p , p [B].

 $\langle 1,2\rangle$  . In this converse we have the 1

- Unit also and on robbs. Correctly, tipo  $\kappa(\beta)$ 

#### U. (c)

Of supplements agricultures

$$||A|||A|| + \frac{1-\lambda}{2} - \frac{2}{1-\lambda} = 0$$

$$(4-\lambda)\times(-2\lambda)-[(-2)\times(-2)]=0$$

1,0000,  $\lambda = 0.5$  are the digenomics

# 9. (b)

ero Sini i Silauchi walues et gisali mia, iki a sum er diogendio ementati yeka a sheka i 1. 5 milia 7.

# 10. (e)

With the given code, we can pay that code in a motivity steeps of costs.

$$\begin{array}{c} S^{\Gamma} \rightarrow S \times 4 \\ \qquad \qquad f = 4 \times 3 \\ \times S^{\Gamma} \Gamma \rightarrow S \times S \\ (S^{\Gamma} \Gamma)^{-1} \rightarrow S \times 5 \\ \qquad \qquad P = S \times S \\ P^{\Gamma} \rightarrow S \times 2 \\ \qquad \qquad P = S^{\Gamma} \rightarrow S \times 2 \\ \qquad P = S^{\Gamma} \rightarrow S \times$$

# 11. (5)

For outlegenormal si

$$\frac{2}{2}A^{2} = A$$
 by the local terms of  $x^{2} = A^{2} + A$ 

## 12. **[b**)

$$P = \begin{bmatrix} 1 & 0 & -1 \\ 2 & 1 & 1 \\ 3 & 3 & 9 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} 4 & 10/75 \\ |9| & -1 \end{bmatrix} \begin{bmatrix} \cos(6) & \cos(57) \\ |9| \\ 1 & 9 \end{bmatrix}$$

$$1 & 0$$

$$1.7 = [2, 5] - 1.25$$

$$-[2, 4] + [2] - (6 - 25)$$

$$-[2, 4] + [1]$$

Since we note they find that (w,a), P(f) we need to that only f at g about an f at g which with a perspect with g upon they are g and g

$$|\det(1, -1)| + \frac{1}{8} \cdot \frac{1}{6} = 2 + 2 + 5$$
$$|\det(2, -1)| + \frac{2}{7} \cdot \frac{-7}{2} = 0$$

$$|| \text{def} (\mathbb{S}_{i}) | 1 - \frac{1}{i} \frac{1}{i} \frac{-1}{-1} + \frac{1}{i}$$

$$|...| |\cos^2 (x^2) = |-3|$$
  
1 = -

$$5 - 2^{-1}$$
  
 $5 - 2^{-1}$   
 $5 - 2^{-1}$ 

Essibility |S| = 1 and

$$\vec{n} = \begin{bmatrix} 5 & -3 & 1 \\ - & & \end{bmatrix}$$

Topics of t=5  $\times$  3.

# 13. (a)

$$\begin{bmatrix}
4A & 7 & -4 \\
-1 & 0 & 1 & 165 & 41 & 16 & 67 \\
-1 & 0 & 1 & 5 & 2 & 16 & 67
\end{bmatrix}$$

$$\Rightarrow \begin{bmatrix}
1 & 2x & 0 & 5 & 16 & 67 \\
-1 & 3b & 3b & 3b & 3b & 67b
\end{bmatrix}$$

$$\Rightarrow 2a & 0 & 5 & -3 \Rightarrow a & \frac{67b}{5} & (1)$$

$$3b & 7 \Rightarrow b = \frac{7}{3}$$

Note substitute of neglicitien (Alwayer

$$2 = \frac{3}{50}$$

$$2 \cdot 5 = \frac{1}{50} \cdot \frac{1}{5}$$

$$= \frac{1-20}{50} = \frac{2}{50} = \frac{7}{50}$$

### 4. (a), (b) and (c) all possible.

In an over determined system having more countries than variables, all these swelgings of linear (a) consisted or igue (b) consistent inforte and (d) in page stan, with the shapping.

## 15. (b)

$$|\beta_i^i A_{i+m}| \le \min\{A_i, \beta_i\}$$

So, High  $a_1$  is the leaf to Lass, while  $a_1$  and  $a_2$  is thing less consider sure, (based on the  $a_1$  and the sure of tank of A=3 the matrix of  $\{A_1, B_2\}$  and which is which the appearance of the only extending the  $a_2$  and the sure of the  $a_2$  and  $a_3$  and  $a_4$  and  $a_4$ 

### 16. ja).

Rank  $\gamma(a) = \text{Hank}[A]$  is necessary in existence of the recent section in Ref. a.

### 17. (b)

The augmented matrix for the given eyelen is:

tuang accept of fine liquids, extra 1886 we men a contact,

$$\begin{vmatrix} 9 & 2 & 1 \\ 2 & 2 & 3 \\ 1 & 4 & 3 \end{vmatrix} \begin{vmatrix} 2 & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \\ \frac{1}{2} & \frac{1}{$$

Since Eqns  $([a_1,b]) = \mathbb{N} + k \cdot ([e]) = \text{not be all } k$  was ables. The system lines in Fourscoulder

## 18. (4)

er. Pilat salvo for eligen values by solving characteristic equation [A] [V] =0

$$\begin{aligned} & \frac{15 - \lambda}{(\lambda - \lambda)^2} = \frac{15 - \lambda}{3} & \frac{15 - \lambda}{(\lambda - \lambda)^2} & \frac{16 - \lambda}{3} & \frac{16 - \lambda}{3} & \frac{16 - \lambda}{3} \\ & \frac{16 - \lambda}{3} & \frac{16 - \lambda}{3}$$

 $\Delta m \, A = J \, \ln (A - M) \, X = 0$ 

$$\mathbf{J}\mathbf{v}_{i} = \mathrm{d}\mathbf{v}_{i} = 0$$

Saking of let we policy  $=2, a_1=0$  in let a be a more be anywhere.

i hologori vedas ponesjak i i kytolonič, may bo wruenias

$$\lambda_1 = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 2 & 1 & 1 \end{bmatrix}$$

where k ,  $k_1$  may be any local turneds affect choice (b) while value k , k into a some with both  $k_1$  and  $k_2 = 0$ , so this his conect a level

Fix we will entry good correct open vector if energy the interior. The integral execution

correspondents to 
$$V = \frac{34 \sqrt{13}}{2}$$
.

## 19. (d)

Figure halfs a transplant through reviewer are the plagariet comparis to encountry that the respective x = 0, x = 0

 $P_{\nu}$ Upgy = - 2i relava era cilon +5 pol,

Which gives indicacetionic.

$$(x_1, x_2, x_3, x_4, x_5) = 0$$

$$x_2 = 0$$
 ...  $0 f$   
 $x_3 = 0$  ...  $0 f$ 

Rinds og ittland (ii) groksine vet evet

$$(\omega_1 - \omega_2 - \omega_3 = 0)$$
 ... 3)

$$\tau_{j}$$
 ) . .()

 $\begin{aligned} & P(H) \cdot \zeta & = -\frac{1}{2} + k \cdot \ln \log (\xi) \cos g \varphi, \\ & S \varphi_1 + 2 \cdot k + 2 \cdot k \cdot 0 = 0 \end{aligned}$ 

$$\frac{3v_1 - 2v_2 - 2v_3(1 - 0)}{v_1 - 4v_3^2 + v_3}$$

.. Eggnweg, Jisan-Till A. (40).

$$\begin{bmatrix} z_1 \\ \vdots \\ z_n \end{bmatrix} = \begin{bmatrix} 0.05.5 \\ 0 \\ 0 \end{bmatrix}$$

$$\mathbf{i} = x - \mathbf{r}_{1}(x_{1}) = 20 \times 6 \cdot 0 + 2/6 \cdot 1 \cdot 0 \cdot 2 \cdot 5$$
  
 $\mathbf{r}_{1} = \mathbf{r}_{2} \times \mathbf{r}_{3} + \mathbf{r}_{1} + \mathbf{r}_{2} \times \mathbf{r}_{3} + \mathbf{r}_{3} + \mathbf{r}_{3} \times \mathbf{r}_{3} + \mathbf{r}_{3} +$ 

20. (a)

They the (the electron)  $exp(A) = \begin{bmatrix} A & P \\ A & 0 \end{bmatrix}$ 

$$A \cdot M > A$$

$$\rightarrow -\frac{4\cdot 3}{2\cdot 2\cdot 3} \cdot 20$$

$$= (-1-\lambda) \cap (-1) \cdot \cup \cup \cup$$

$$\Rightarrow \qquad (k+5)(k+4)=0$$

— 
$$\lambda_i = (5.4 \, {\rm M}_{\odot})^{-1}$$
 Somewhalf  $\mu$  in  $\lambda_i = 6$  we see to introduce

vertich Indicagen value problem «(#44%) Қырды

$$H_{i} = \begin{bmatrix} -1 & 2 & 2 \\ 2 & 0 & 3 \end{bmatrix} = 3$$

Pulling 3 - 48

weight 
$$\begin{bmatrix} 1 & 2 \\ 2 & 0 \end{bmatrix} \begin{bmatrix} x \\ 2x \end{bmatrix} = \begin{bmatrix} 0 \\ 2x \end{bmatrix}$$
  
 $\begin{bmatrix} x & 2x \\ -3x \end{bmatrix} = 0$  (1)  
 $\begin{bmatrix} 4x & 2x \\ -2x \end{bmatrix} = 0$ 

Misse (Back Jille et Leisenip du Lation de la la

$$x_1 = \frac{n_{x_2}}{n_1} = \frac{n_2}{2}$$
  
 $x_2 = \frac{n_2}{2}$   
 $x_3 = \frac{n_2}{2}$ 

$$\Rightarrow$$
  $\frac{\lambda_1}{\nu} = 0$ 

New for the unswers given we saw to approximate majorable to property  $\frac{1}{2}$  is

in this ratio 
$$\frac{\lambda_1}{v_0} = \frac{2}{-1}$$
 , as

ି ଓ ମଧ୍ୟରେ (୨୦୦ ମ ପାଞ୍ଚଳ କାରତ । ଓ ଅକ୍ଟେଲ୍ଲ ଅନୁସ୍ଥାର ଭିଲାକ୍ତି

Since  $\cos \theta + \cos \theta$  (o) an analog inversion and has the sections  $\Theta$  generated corresponding to n=1.

in distribution and distribution of the similar single gaps  $\sigma_{\rm sin}$ 

$$\begin{array}{cccc} A_1 & 2J & 4J \\ & 2-3 & -3 \\ & 4-3-3 & -3 \\ (2-3)((5-3)-3-3) & & J \\ & 2^2-7) & -3=0 \\ & 3J & 2J \end{array}$$

All places values on Alares in the St.

# 22 (9)

Afficial (0,0] will be the corresponding open values of (0,0] and wither one-coupling eigenvectors

# 29. (a)

Mailtref 1:

According to problem

Herefore 84+ is tipled with  $(C \times \overline{C})$  was unlabeled as a neet to be the layer of  $\overline{C}$ .

$$f = 2f = \frac{AS(2)}{S}$$

$$= \begin{bmatrix} Sev & S(0) & 0 \\ A(0) & Sev & 0 \\ S(0) & Sev & 0 \end{bmatrix}$$

## Mathod 2:

A responsible of the linding Autoby multiplying Protected of the charges (action (a) and (d) and limiting on, which are larged the product as MAIN typication Or Again the arrayon such

# 26. (a)

A Singular metric il Deletini nanti sicore

- B Non-square mail  $x \mapsto 0$  described a share extract
- $\mathbb{C}(B_{2}(x,y))$  and  $x\mapsto \mathbb{E}_{\mathbb{C}^{2}}(x,y)$  and a substance of x,y and a
- El Orthogona martis, o Description, subseve one

# 25. (c)

Perform Calibration institution

$$\begin{bmatrix} 1 & 1 & 1 \\ & \ddots & \\ & & 0 & \frac{m_{max}}{2^{m_{max}}} & 7 & -2 & -1 \\ 1 & 0 & 0 & & & 0 \end{bmatrix}$$

Liki new Eo ⊯la dom

So is rank a lite number of nonize la rewritinffici later.

1.5 та k – 2.

# 28. (9)

We die bedag fan eilêngean, werfare hadag a apar flat korton Milwerd w

Firelly, ness and a major of isomorphis seen by linking their deformations:

The apage eggin let Ly Less two vectors at

The agency -2 is a = 2 , which is  $0.67 \pm 0.7$  , 0.7

We can show this by a occasionly acting equation() will Can I Directly chean booking for 3 land quartery.

Usefice a sectod choldes (b) (b) and (d) are chose an entire Act here a 6 thage Alexandria sector by taking betwice the choldes.

## 27 (h)

The value of  $(30^{\circ} - 10^{\circ})^2$  is inearly to remember the solution obtained in previous question regardly [46, 43, 6]] and  $(4-2, 6]^2$ .

This can be easily theoretically  $\theta$  (i.e.) support  $\theta$  (i.e.)

. – О 62 г.28 г.29 20 г.9 г.С. 35 г.1, – 0 На те 1 коласутерател

# 28. [d]

i İnakugu en∋dir ehilibi 2 ve taşa ⊖n kı

than by (an iso elimination processure)

$$\begin{bmatrix} 0 & 0 & 0 & 2 \\ 0 & 4 & 2 & 0 \\ 2 & 2 & 0 & 5 \end{bmatrix} = \begin{bmatrix} a_1 & b_2 \\ a_1 & 2 & 0 \\ 0 & 2 & 3 & 5 \end{bmatrix} = \begin{bmatrix} 2 & 0 & 2 \\ a_1 & 2 & 3 & 5 \\ 0 & 2 & 3 & 2 \end{bmatrix}$$

$$\begin{bmatrix} a_1 - \frac{2}{4}a_2 \\ a_2 - \frac{2}{4}a_3 \end{bmatrix} = \begin{bmatrix} 12 & 0 & 3 \\ 0 & 2 & 3 \end{bmatrix} = \begin{bmatrix} 2 & 0 & 2 \\ 0 & 2 & 3 \end{bmatrix} = \begin{bmatrix} 2 & 0 & 2 \\ 0 & 2 & 3 \end{bmatrix}$$

Fig. kg/l power seet u=2 who had not start. Also notice that (24)=3, which is  $A\in \mathbb{R}_+ = 3$ ,  $(24)\neq 3$ . Although reprocedure.

il. En cliente non existent le prove system

#### 29. (c)

$$= \left[ 6a - \frac{4}{3} \cdot \frac{2}{4} \right], \ \left[ 6a - k^{2} \right] = \left[ \frac{4 - k}{3} \cdot \frac{3}{4 - k} \right].$$

ta van eigen veeter  $\begin{bmatrix} 1007\\ 100\end{bmatrix}$  [20+37]x = 0

$$\Rightarrow \left[ \frac{4 - k - 2}{2} - \frac{10}{4} \right] = 0$$

$$\Rightarrow (2 - k) (0, 7) + 2 - 101 = 0$$

# 30. fei

$$\begin{aligned} &(2_{i_1} - \text{Texa}_2(A)) \\ &(a_{i_1} + b_{i_2} - b_{i_1} + \text{Irsc}_2(A)) = 2 - (-1) + o = 0 \\ &\text{Now} \qquad & b_{i_1} = b \\ &(-1)^2 + b_{i_1} - b_{i_2} = 1 \\ &\Rightarrow & -b_{i_2} + b_{i_1} = 0 \end{aligned}$$

Only shains (c) states at it a contribut.

 $\mathfrak{J}^{*}$ . (y)

13.  $\lambda_{j}(\lambda_{j})$  ,  $\lambda_{j}(s)$  = the eigenvalues of k . Then the agenvalues of

. The proof of  $\mathbb{R}^n$  ,  $\mathbb{R}^n \to \mathbb{R}^n$ 

Hele Sincomine cause values handle. No. 20 Institution eigen vertex if lend of the Land 25.

22. (4)

By objecty if eigen values cannot proportal administration of the equation out in with  $s \sim 10^{\circ}$  . Since  $(s) = \frac{1}{2} (1 + \frac{1}{2})  . Sinly inclinate  $(s) = \frac{1}{2} (1 + \frac{1}{2}) (1 + \frac{1}{2})$ .

33. (d)

Since  $S = \{A = A^{-1}\}$ =  $A^{-1} = A^{-1}$ =  $A^{-1} + A^{-1} = B^{-1}$ 

i a

n. Sits synthetric

Since:

$$\begin{split} D &= (A + A^T)^T + A^T + (A^T)^T \\ &= (A^T + A + A)^T + A^T + A^T \end{split}$$

1.5..

80.0 a SlawZy in eric

34. (nj

$$\begin{aligned} & \frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right) & \frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right) & \frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right) & \frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$$

2L (b)

 $\begin{array}{ll} 1 & \quad \forall \in (a_1,a_2,\dots,a_n)^n \\ \mathbb{P}_{\mathcal{F}}(k,Y_{+},k,y) & \text{the non-zero in Linde.} \\ \mathbb{P}_{\mathcal{F}}(k,Y_{-}^n) & \text{figure } Y_{+}^n \end{array}$ 

: Now Bank, Africania (Paris Al Taris Mi)

- → Markita Strainfell ()
- $= -\frac{1}{2} \operatorname{alt}(xx)(x)$

Police They are not of a concernor of the

By taking that was a  $\lambda^2$  and it press projectors so the first contact as  $\lambda = 100$ 

Kalami'ros eireddio

3<del>8</del>. (a).

is not (2.1%). It is a contrapt to the year ways where you at some or the V

Since (+X  $\le A_3 \le X_{\frac{1}{2}}$ ) are N early depondent on  $X = X_{\frac{1}{2}} = X_{\frac{1}{2}}$ . The set  $(X_1, X_2, X_3) = X_{\frac{1}{2}} + Y_1, \quad X_1 = X_{\frac{1}{2}}$  will also specifie vector specified for the X on X onto

27 (2)

The Heiner shall be shall be an interesting of the problem

- The vocio and valtable inestry magnitude it.
- They muct been K.

Here  $\begin{aligned} \mathcal{X} &= \{ x \in \mathbb{R}^2 \mid y = y, \ \text{if } z \in \mathbb{C} \\ &= x^2 - (y - w, x, y)^2 \end{aligned}$ 

Step 1: Note, 1, 1, 10 (2.11.5). If she incode in Prince 18-4 here is sense and in the consideration for the best firm. It is independent between the last second solutions in a prince of the second solutions in a prince of the second solutions.

and the theory of  $\begin{bmatrix} 1 & -1 & 1 \\ 1 & 7 & 1 \end{bmatrix}$  is a.

Step 2: Next, we need to check if the set souns X . Here,  $X=\{y\in \mathbb{R}^N:|y|=y_0+y_0=0\}$ 

The general minima sounds of  $\lambda = \begin{bmatrix} a_1 + b_2 \\ -b_2 \end{bmatrix}$ 

Otherwise  $\frac{k_1}{k_2} = \begin{bmatrix} 0 & \sqrt{k_1} & k_2 \\ k_1 & \sqrt{k_2} & k_2 \end{bmatrix} = \frac{k_1}{k_1}$  we determine the periodic solutions, for X

$$A = \begin{bmatrix} A \\ 0 \\ A \end{bmatrix} \text{ or } \begin{bmatrix} A \\ A \\ 0 \end{bmatrix}$$

Now should act of the screen deligate state (by the combinations of [1, 1], to send the C, 1 for setting and the C, 2 for a setting and X of the combination of the screen 
3J. (a)

The adjunction matter by June 1 is system of

utdag Gouse chimaruna el ext⊸e grt.

Note, the infinite polaries sections to us the completely zero.

$$\begin{array}{ll} c_{ij} \alpha + 2 & \text{supp} \ \beta + \epsilon = 0 \\ \Rightarrow & \alpha = 2 + \epsilon \epsilon_i \beta = 7 \end{array}$$

39. (c)

$$A = \begin{bmatrix} x & x^{2} \\ 0 & 2 \end{bmatrix}$$

$$\begin{bmatrix} (x+2)j & 0 \\ 0 & 1 \end{bmatrix} = 0$$

$$\begin{bmatrix} 0 + k & 1 \\ 0 & 1 - k \end{bmatrix} = 0$$

$$\Rightarrow \qquad (2 - k) = 0$$

$$\Rightarrow \qquad (k+2)$$

Now consider the High (will reproblem

$$\begin{aligned} & [A = M, K = 0] \\ & \frac{2 - \lambda}{1 - 0} \frac{1 - 0}{2 - \lambda} \frac{1}{1 - 2} = \begin{bmatrix} 61 \\ 0 \end{bmatrix} \\ & (1 - \lambda) = 2, +0.337 \\ & \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} \begin{bmatrix} r & 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \\ & \alpha = 0 \\ & \beta = 0 \end{aligned}$$
 (1)

The solution is the concept,  $-0.07_{\rm p}=0.000\%$ 

$$\begin{bmatrix} \gamma^{(i)} = \frac{1}{L^{(i)}} \begin{bmatrix} \gamma^{(i)} \\ \gamma^{(i)} \end{bmatrix} \end{bmatrix}$$

40. (4)

The process products of  $a = [0, 1, 0]^n$ 

ം it Y ്പ് എ എട്ട് sar bolaritas as

$$\begin{aligned} \frac{\partial \hat{x} \, \hat{x} - \begin{vmatrix} 1 & \hat{x} & \hat{x} \\ \alpha & 1 & \alpha \\ x - \hat{x} - \hat{x}_0 & \alpha_0 \\ & - x_0 \hat{x} - \hat{x}_0 \\ & - x_0 \hat{x} - \hat{x}_0 \\ & - x_0 \hat{x} - \hat{x}_0 \end{aligned}$$

$$h_{DW} = 2\dot{\phi}(1 + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2}$$

 $\sigma \mapsto a \bowtie \sigma \circ 3 \times 3 \mapsto \sigma \circ 3$ 

$$(x_1, \dots, x_n) = \begin{bmatrix} x_1 & x_2 & x_2 \\ x_1 & x_2 & x_2 \\ x_1 & x_2 & x_2 \end{bmatrix}$$

$$\begin{aligned} & \frac{\partial \cos^{-1}\theta_{0}}{\partial t} \frac{\partial t^{-1}}{\partial t} = 2t \times X \\ & = \frac{\partial t^{-1}\theta_{0}}{\partial t} \frac{\partial t^{-1}}{\partial t} \frac{\partial t^{-1}}{\partial t} \frac{\partial t^{-1}}{\partial t} \frac{\partial t^{-1}}{\partial t} \\ & = \frac{\partial t^{-1}\theta_{0}}{\partial t} \frac{\partial t^{-1}}{\partial t} \\ & = \frac{\partial t^{-1}\theta_{0}}{\partial t} \frac{\partial t^{-1}}{\partial t} \\ & = \frac{\partial t^{-1}\theta_{0}}{\partial t} \frac{\partial t^{-1}}{\partial t} \frac{\partial t^{-1}$$

Be morting ∐ Can J fidF which

$$\begin{bmatrix} 0 & 0 & 1 & x_0 \\ 0 & 0 & 0 & x_0 \\ 0 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 0 \\ -x_1 \end{bmatrix}$$

$$\begin{bmatrix} 0 & 0 & 1 \\ -x_1 \end{bmatrix} \begin{bmatrix} 0 & 0 & 1 \\ -x_2 \end{bmatrix} \begin{bmatrix} 0 & 0 & 1 \\ -x_2 \end{bmatrix} \begin{bmatrix} 0 & 0 & 1 \\ -x_2 \end{bmatrix} \begin{bmatrix} 0 & 0 & 1 \\ -x_2 \end{bmatrix}$$

Now see have  $\lambda$  -first the objective type of  $\lambda^{\mu}$ 

$$\begin{array}{lll} |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| \\ = |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| \\ |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| \\ = |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| \\ = |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| \\ = |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0}| \\ = |x_{0}-\lambda_{0}| & |x_{0}-\lambda_{0$$

21 (b) 
$$\begin{aligned} & v_{k} = T_{k} c_{k} c_{k} c_{k} \\ & - T_{k} c_{k} c_{k} c_{k} \\ & - 2 c_{k} c_{k} c_{k} c_{k} c_{k} c_{k} c_{k} \\ & c_{k} c_{$$

42 (4) The eigenvalue of any switte-stills (4) × 3.5000.5 Text

$$\begin{vmatrix} A & -\frac{1}{2} - 3 & 2 \\ -3 & 3 & 3 \end{vmatrix} = 0$$

$$\begin{vmatrix} 3 & A & -2 \\ -1 & 3 - A \end{vmatrix} = 0$$

$$\begin{vmatrix} A - A & A \\ -1 & 3 - A \end{vmatrix} = 0$$

$$\begin{vmatrix} A - A & A \\ A - A & A \end{vmatrix} = 0$$

$$\begin{vmatrix} A - A & A \\ A - A & A \end{vmatrix} = 0$$

. A will fall of a this requestion above of hymroCaylay. - Namion theories

# 44. (9)

Tr + sl c<sub>1</sub>|**3**,5 //....

X/(-1) and X/(-2) = 0 which this because where there

# 4b. [b]

$$(\Phi C \overline{e}^{1} \Phi - (\overline{Q} \wedge V^{-1})\Phi - (\overline{Q} \wedge V^{-1})\Phi = (Q \wedge (\overline{Q} \wedge V^{-1})) = (Q \wedge (\overline{Q} \wedge V^{-1}))$$

 $-510.2 \pm 5100$ 

# 48. (0)

Under (a) 
$$AA^*A = A_1 s$$
 control.  
Since,  $AA^*A = A[(A^*A) + A_1]A$   
 $= A[(A^*A) + A_1]A$   
 $(A^*A) = A^*$   
Under  $A^*A = A_1 A_2 + A_2$ 

# 47. (6)

Frank class (i) matrix is an idea substyle in parameter exactly distinctly a performance of the sample of the sam

### 4E 'd'

The economics mains to given system is

Using Galax eigenstein we reduce  $(a_{\infty})_{0 \le a_{\infty}}$  , and the contradiction  $a_{\infty}$  is respectively.

$$\begin{bmatrix} 1 & 1 & & 5 \\ 1 & 2 & 3 & 4 & \frac{3^2 - 4}{8^2 - 4} & \frac{3}{6} & 1 & 2 & 1 \\ 1 & 2 & 4 & 5 & \frac{3^2 - 4}{8^2 - 4} & \frac{3}{6} & 1 & 2 & 1 \\ 0 & 3 & 6 - 1 & 3 & \frac{3}{6} & \frac{1}{6} & 1 & 3 & \frac{3}{6} \\ 0 & 3 & 6 - 1 & 3 & \frac{3}{6} & \frac{1}{6} & 1 & 3 & \frac{3}{6} \\ 0 & 0 & 6 & 7 & 0 \end{bmatrix}$$

$$\log n + 1 = n + 7$$

$$PP(A(A) = rank(A - A) - A$$

a. Pianerydy, yr i

$$1 \qquad \qquad k = 7 \cdot \operatorname{sgns} \left( \left\langle t \right| = \operatorname{rank} \left( A \right) | B \right) = 2$$

which is loss than then sen of garables.

A in each K = A . Figure 3.4 in this hall possible 6.00 A by  $A^2$  (i.e. Solution is possible.)

#### 49. (3)

A growther matrix is 
$$\begin{bmatrix} 0 & 3 & 0 & 1 \\ 1 & 1 & 1 & 2 \\ 1 & 0 & 21 & 4 \end{bmatrix}$$

) or carting galaxy-air time, on on the map  $x_i \omega + \infty$  and

$$\begin{bmatrix} 2 & 3 & 0 & 4 & & & & \\ 1 & 1 & 2 & 4 & & & & \\ 2 & 2 & - a_1 & & & & & \\ 2 & 2 & - a_2 & & & & & \\ 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & - 1 & a_1 & & \\ 2 & 2 & - 1 & a_1 & & \\ 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & - 1 & a_2 & & \\ 2 & 2 & 2 & 2 & -$$

िसर प्राण्डिच इ**ावन ४५। ह**) ...१. **e**a de costem Williamse avesducents

 $14 \pm 0.04$ )  $- (A(B) \pm 2)$  then the system will be consistent on a set is sweet at the fine terminal x

50. (b)

 $T\mapsto x_{j}x + i$  by let i in a more variables.

$$\begin{vmatrix} 4 & 2 & 3 \\ 5 & 1 & 3 \end{vmatrix} = \begin{vmatrix} 7 \\ 6 \end{vmatrix}$$

THE August as a memory (A. 18) is given by

$$\begin{bmatrix} 1 & 2 & 7 \\ 2 & 0 \end{bmatrix}$$

Following Gauss diminition on this  $|\Delta b|$  as follows:

$$\frac{4}{12} + \frac{1}{12} \begin{bmatrix} 1 & -\frac{1}{12} + \frac{1}{12} \\ 0 & -\frac{1}{12} \end{bmatrix} + \begin{bmatrix} 4 & 2 & 7 \\ 0 & 3 & 1 \end{bmatrix} \begin{bmatrix} 7 & 7 \\ 0 & 3 \end{bmatrix} \begin{bmatrix} 7 & 7 \\ 1 & 2 \end{bmatrix}$$

 $\| f(x) g_{ij} - x f(x) \|_{L^{2}(\Omega)} \leq 2$ 

(Tierp terct urva okwa'n (4.6) Tierria i 1

le' he rumaer di non pero ro≠o ni (Al)

Since Rank  $|A| \ge |A| \cdot \exp \sqrt{|A|}$ . The event may not so that

51. (d)

The wing her tails is trivial and cover system to

howevering sold. Tell lank (A) = ank (A) = = 3 ... A control close to waite extensity Closections on a rower (a) (A)

52 jb

Character with a pre-child A &

$$\begin{vmatrix} 4-\lambda & b \\ 2 & b & b \end{vmatrix} = 0$$

$$\Rightarrow (3-\lambda)(4\cdot 5 + \lambda) + 2 \times 5 = 0$$

$$\Rightarrow -\lambda (4 + \lambda - 5) = 0$$

$$\lambda = 0 = 0$$

58. (b)

$$\begin{array}{ccc} (1-\lambda) & 2 & & \\ 1 & 0 & (2-\lambda)_{1} \\ - & 1 & 2\lambda(2-\lambda) + 0 \\ \dots & \lambda \in 1, \lambda \end{array}$$

New street to a gen valce proview is:

$$\begin{array}{ccc} & & & & & & & \\ & & & & & & & \\ & 1 & \lambda & 2 & & & & \\ & 0 & 2 - \lambda & & & & & \\ & & & & \end{array}$$

pungtawi cakeran Ke Kel

$$= \frac{\left|\frac{0}{4}\left(\frac{2}{3}\right)^{-1}\right|}{\left|\frac{3}{3}\right|} = \frac{3}{3} = 0 \tag{3}$$

Example value of s=3 and  $S=\lambda_g=\frac{1}{n}$  .

Try medical costational ():

$$|x-1| \le 2 + \frac{1}{3} = \frac{1}{2}$$

54. (n)

Eigenvalues at 
$$\begin{vmatrix} 1 & 0 \\ 0 & 0 \end{vmatrix}$$

- gen values of  $\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$ 

$$\begin{bmatrix} \lambda & \\ 0 & -\lambda \end{bmatrix} = 0$$
$$\begin{cases} R + 0 \\ \lambda = C_0 \end{cases}$$

$$\begin{vmatrix} 1 & 1 & 2 & 1 \\ 1 & 2/2 + 1 & 0 \\ (2-2/2 + 1) & 1 \\ 1 & 2 + 7 \text{ or } 7 \end{vmatrix}$$

High values of matrix size  $\begin{bmatrix} 1-y & 1 \\ 1 & 1 \end{bmatrix}$ 

 $z = 1 + y y^{-1} = 1$ 

$$\lambda(t) = \lambda = 0$$

$$\lambda(t) = 0$$

$$\lambda = 1$$

Balandarona kilekareige Jacobi balan

$$0 \left[ \frac{1}{r} \left( \frac{1}{r} \right) \right].$$

Companies (a) (a)

55 (c)

Sum of the organization of instituting a trace of Mark in author bisological values present in the many.

$$\begin{array}{ll} 1 + 2 + p = 3 + k_2 + k_3 \\ \Rightarrow & p = 1 + 3 + k_2 + k_3 \\ \Rightarrow & k_2 + k_3 = n + 1 + 2 + p = n \end{array}$$

60. (a)

énce. ∏%, 4

and if the of the digits of the states  $\rho_{\rm c}$  ,  $\rho_{\rm c}$ 

$$\mathbf{H}_{N_0} = \left[ A_1 = 0 \right]$$

Aber

$$A_{1}=\frac{\rho_{1}-\rho_{2}}{\rho_{1}-\rho_{22}}=0$$

 $\begin{array}{ll} (x_1,y_1,y_2,y_3,y_4,y_4) = 0 \\ \text{Schich is and descrip} \end{array}$ 

57. (d)

Hitherec = sub-equation is

$$A^2 + A^2 + 24 + 4 = 0$$

That because from the leaves

$$r_0 = r_0 + \overline{r}_0 + \overline{r}_0 = 0$$

$$f = -2.8 \cdot \mu B \cdot 100$$

Mullaying by Proceedings are

$$\frac{1}{100} + \frac{1}{100} = \frac{1}{100}$$

58. (A)

Also produced is the produced as two very random leading that  $a \in \mathbb{R}^n$  , we definition

59. (a)

When 
$$\gamma_i = \lambda^{an} = \lambda^{a-1}$$
,

$$2T = -i\partial W + f$$

$$= \begin{bmatrix} \frac{(3)^{3}}{\sqrt{3}} + i^{2} & \frac{(3)^{4}}{\sqrt{3}} + i^{2} \\ \frac{(2)^{3}}{\sqrt{3}} + \frac{3}{\sqrt{2}} + \frac{72}{\sqrt{3}} + \frac{3}{\sqrt{3}} + \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

- Compare both a dealer.

$$|x|_{2} = \frac{(3)}{10} \left[ \left( \frac{x}{5} \right) + \left( \frac{3}{5} \right) x + 0 \right]$$

$$\Rightarrow \qquad \frac{5}{6}x = -\frac{9}{5}..\frac{1}{5}$$

$$\mathbf{r} = -\frac{1}{\pi}$$

60. (c)

$$\begin{array}{ccc} & \mathbb{R} \lambda_1 & \mathrm{Trane} \left( \mathbf{a} \right) = -\lambda \\ \Rightarrow & \lambda_1 & \lambda_2 = 0 \\ & \mathbb{T} \lambda_1 = \left[ \mathbf{a} \right] & \mathbb{R} \mathbf{a} \\ & \lambda_1 \lambda_2 = -\lambda_2^2 \end{array} \qquad (1)$$

Solving  $\chi$  and  $(r) = a \operatorname{qod} \lambda$  on  $\lambda$ , |S| = 7

61. (4)

Sum of decador (na h Tr(A) - -1 - -1 - -3 - -1 -Sistem (n. k) = 1

ម៉ាកែទៅcooldអភិបាលស្រាក់ 1 36 ប្រកស់រដ្ឋមន្ត្

**82.** (b)

$$\begin{bmatrix} S & B & 1 \\ S & S & 1 \end{bmatrix} = \frac{1}{(sv + bv)} \begin{bmatrix} (1 - sv) \\ -c & B \end{bmatrix}$$

$$\therefore \begin{bmatrix} (h+1) \\ -c & A \end{bmatrix} = \begin{bmatrix} (S + 2b)(s - 2b)(s^2) \end{bmatrix} \begin{bmatrix} 1 - s \\ -c - 2s \end{bmatrix}$$

$$\vdots \begin{bmatrix} (1 - 2b - 3) \\ -c - 2s \end{bmatrix}$$

$$\vdots \begin{bmatrix} (1 - 2b - 3) \\ -c - 2s \end{bmatrix}$$

63 (d)

$$x_1 + 2x_1 + x_2 = 4x_1 + 8x_1$$

$$3r_1 + 2r_2 + 3r_3 + 12r_4 = 0$$

The sugmentate matrix is 
$$\begin{bmatrix} 1 & 2 & 1 & 4 & 12 \\ 5 & 5 & 3 & 15 & 6 \end{bmatrix}$$

Period ingreats: who alter on his waget

$$\frac{2 + 1 + 4 + 2}{2 + 0 + 3 + 12 + 12} \left[ \frac{1 + 2 + 1 + 4 + 2}{6 + 2 + 1 + 12 + 2} \right]$$
$$= 0.00(4) \quad \text{to } k (2 + 2) = 1$$

So, sweet is consistent.

Once systems rank — I silessification and one of the factors, only usince (multiple) non-missification exists.

64 (a)

$$A = \begin{bmatrix} 2 & 2^4 \\ 1 & 3 \end{bmatrix}$$

Chalcale Madequation of Alsi

$$\begin{aligned} S &= 1 - 2 \\ &= \left[ 1 + \lambda \right] = 0 \\ &= \left( 2 + \lambda \right) \left( 2 + \lambda \right) = 2 \\ &= 0 \\ &= 0 \end{aligned}$$

The origin value problem is  $(A + \lambda)/\nu = 0$ 

$$\begin{bmatrix} 2 & k & 2 \\ -k & 3 - k \end{bmatrix} \begin{bmatrix} y \\ -y \end{bmatrix} = \begin{bmatrix} 61 \\ 9 \end{bmatrix}$$

Pulling A = 1

$$\begin{bmatrix} 1 & 2^{-1}x_1 & 0 \\ 1 & 2 & x_2 & 0 \\ 2 & x_3 & 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

$$= \begin{bmatrix} x_1 + 2x_2 & 0 \\ x_2 - 2x_3 & 0 \end{bmatrix}$$
(1)

So that is  $x_i = k_i \dots = -2^{-1}$ .

$$y_1 = \begin{bmatrix} 0 & 0 \\ -8 & 0 \end{bmatrix}$$
$$x - y_2 = -2 \cdot 1$$

Since each (4)  $\frac{1}{2}$  is a same arc each  $\phi_2$ 

Lu Caro de la illa an elpan vectori.

65. (c)

Graph 
$$C = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 2 & 2 \\ 0 & 1 & 1 \end{bmatrix}$$

P and angular. Zerdgen value are the diagonal promotisms the rate was larger values are therefore  $\lambda=1,\lambda=2,\lambda=3$ 

New the discoveries needs to  $[A+\lambda](\hat{a}+\hat{b})$ 

$$\begin{bmatrix} 1 + 3 & -1 & 0 \\ 0 & 2 + x & 2 \\ 0 & 0 & 2 + 3 \end{bmatrix} \begin{bmatrix} x_1 \\ y_2 \\ y_3 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

Put ing iki is 11 wa ger, prene gero ve por ng respanding to this eigenmake.

$$\begin{vmatrix} 0 & 1 & 0 & ||\gamma_1|| & ||01|| \\ 0 & 1 & 2 & ||\gamma_2|| & ||01|| \\ 0 & 0 & 2\gamma_1(z_1) & ||11|| \\ \end{vmatrix}$$

Wind green wearing ons

$$\begin{aligned} x_0 &= 0 \\ x_0 &= 0 \\ x_0 &= 0 \end{aligned}$$

$$\Delta t_{\rm e} = 0$$

This at their is  $\tau_g=0$  ,  $\tau_f=0$  ,  $\tau_f=4$ 

So the agentiation 
$$\hat{x}_i = \begin{bmatrix} a \\ 0 \end{bmatrix}$$
 is  $x_1 \cdot x_2 \cdot x_3$ 

-9.03.0

Emot, none onthe organizations also millioneds matches with a leading well for the England sector of the organization.

Now corresponding to  $x_0 = 2$ , we get by substituting x = 2 in the eigen value profile. The Mawing set of a preface.

Milit bises the equator at

$$\begin{aligned} x_1 - x_2 &= 0 \\ & \quad \exists x_1 = 0 \\ & \quad x_2 &= 0 \end{aligned}$$

Sometic value of value v<sub>a</sub> in the

$$\mathcal{X}_{i}(\mathcal{X}_{j}) = \left( \frac{1}{2} \sum_{i \in \mathcal{X}_{j}} \left( \operatorname{Lie}_{i} \left( \mathcal{X}_{j} - \mathcal{X}_{j} \right) \right) \right)$$

Since fond of the older vectors given in the challest spot to see the enterprise of a Youth Time should be Williams as a complete with the complete seems of so.

By putting  $\mathbf{x} = 0$  in the digentivative problem, we have

pulling  $e_1 = a_1 \cos g \cos \phi_1 = 2 \sin a \cos \phi_1 + a_2 \sin \phi_2 = 3$ 

$$\lambda = \begin{bmatrix} s \\ 2s \\ \frac{1}{2s} \end{bmatrix}$$

$$\lambda = \lambda + \lambda + \lambda_0 = \tilde{1} + \tilde{2}^{-1}$$

Only be eigenvector given to concount  $(2^{\circ}, 5)$ 

) is to repose that the property of the  $(\delta)$ 

üü. (cı

56

Fig⇔ inclues of a class symmetric maids are either zero or pure impgingly.

 $\theta 7 = \langle \psi \rangle$ 

Sum of Higher values  $\pm$  Traypolytic  $2 \pm \gamma$ From Garages where |A| = 2p + 2p

t Sching ( rand d resignition on any y = 10

to. (c)

 $T\mapsto Augmented \cap \omega f(x)$ 

$$|X(y)| = \begin{cases} 2 & 1 & 1 & 0 \\ 0 & 1 & -\frac{1}{2} & 7 \\ 1 & 1 & 0 & 0 \end{cases}$$

Processing gas selections in a force following of

$$\begin{vmatrix} 2 & 1 & 1 & 0 \\ 0 & 1 & 7 & 0 \\ 0 & \frac{1}{5} & \frac{1}{5$$

 $\mathsf{Bah}_{\mathcal{A}}(A) : \mathsf{Cark}(A \mid b) = b \circ J$ 

Geri finde number of extincing a leict val ⇔it.

**33.** (c)

១០១៤(៣០១៩០០ មានទំនាញ មនុស្សស្នាក្រ បញ្ជប់ខ្លាំ**ង។**ន

 $0.4 \pm 8.00$  to  $\mu = 20$  to a  $\mu$ 

 $\operatorname{Bank}(A \mid \Theta) = \operatorname{Rond}\operatorname{Bale}(A) \cup X$ 

- m fka kiyahoy≃ Bankitan
- A Diversigate mot equal and has no solution for  $2 - 6.5 \text{ Mpc} \cdot 20$
- 73. (c)

Figer values of symmetric metric are always real.

(1. (a)

Situating secure is requestion guest a case. celuse and the eaugenetic ements themselved etich alb Lische Si

72. (c)

followed eigen values of  $A = \begin{bmatrix} 0 & 5 \\ 5 & 0 \end{bmatrix}$ 

hoiche normalic eque colè

$$\begin{bmatrix} 0 & \lambda & 0 \\ 0 & 0 - \lambda \end{bmatrix} = 0$$

$$-(9-4)((8-4)-25=0$$

$$\Rightarrow x' - 1/x + e/ = 0$$

To Aigen values ale.

73. (2)

Into given system to

$$x = 2y = 2 = 4$$

$$2x - y - 2x = 3$$

$$x - y - x = 1$$

Use Gauss of move or mainted on le laws.

Augmented Hebris is:

System is concident.

Now egateration kill

ћилице сијавије сез пошаја

So we have immine sumber of coultons.

74. (c)

$$A = \begin{bmatrix} 1 & 1 \\ 1 & -1 \end{bmatrix}$$

Higgs 170 are the male of the chalcater still: aa yhemila igivan diskisti.

$$\begin{bmatrix} A & 1 \\ 1 & -1 - 2 \end{bmatrix} = i$$

$$-(7-2)(7+2)-7=0 3.4-9=0 3=-\sqrt{3}$$

Figure values of Alexand Figure 1  $+\sqrt{s}$  respectively.

For expension expension 
$$A^{p} = (\sqrt{2})^{10}$$
 and  $(-\sqrt{2})^{10} = 2^{10}$  on  $(-\sqrt{2})^{10}$  and  $(-\sqrt{2})^{10}$  and  $(-\sqrt{2})^{10}$  and  $(-\sqrt{2})^{10}$ 

?a. (a)

$$A = \begin{bmatrix} 5 & 2 \\ \cdot & 9 \end{bmatrix}$$

Characteriste deutation a

$$\begin{aligned} & \frac{(5-\lambda)^{-3}}{(-3-\lambda)} & \frac{3}{\lambda} & \frac{3}{\lambda} \\ & \frac{(5-3)^{3}(5-2)+3}{(5-2)+3} & \frac{3}{\lambda} \\ & \frac{3}{\lambda^{2}} & \frac{3}{\lambda^{2}} & \frac{1}{\lambda} & \frac{3}{\lambda} & \frac{3}{\lambda} \end{aligned}$$

No⊷, ta fine eigen vectors:

$$\begin{aligned} & [A \cdot M] k = 0 \\ & \text{which a} \begin{bmatrix} 5 - k & 0 \\ -1 & 2 \cdot k \end{bmatrix} \begin{bmatrix} m \\ m \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \end{aligned}$$

Potá i Sir e rive equajo legococycl

$$\begin{vmatrix} d & 5 & 1 \\ 1 & 1 & 1 \end{vmatrix} = \begin{vmatrix} 2 & 2 \\ 5 & 5 \end{vmatrix}$$

জীননা সুদ্ধের ভোকে oguztion.

gives us the equation 
$$2x_1 + 2x_2 = 0$$

$$r_* = r_{\overline{c}}$$
 (

Which is only one days idea,

$$x_{n-1},x_{n} \mapsto 0$$

Mice-sociation e

So and eltern vector is  $z_{i,j} = \frac{\pi c}{|z_i|}$ 

When of the complex is the  $x = \frac{1}{x}$ 

$$= \frac{1}{\sqrt{(-3)^2 + (3)^2}} = \frac{3}{2}$$

$$= \frac{32}{1}$$

$$= \frac{32}{1 + 32}$$

the other approved at a calmination building that n, er ogenvillig

4. В пацеруаце друж<mark>а</mark>с

$$\frac{z-t}{t} = \frac{2}{2t} \left[ \frac{x_t}{x_2} + \left[ \frac{0}{1} \right] \right]$$

$$\begin{bmatrix} 1 & 3 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} a_1 \\ a_2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

Which plyes the sugar or

$$s(\theta) = -r_1 \cdot C_{12} = 0$$

Wichis ступ на ради.

$$(\mathbf{z}_1 + S\mathbf{z}) = \mathbf{f}_1$$

Anipod dolubbanio

$$S_{Z} = \begin{bmatrix} x \\ y_1 \end{bmatrix} \cdot \begin{bmatrix} 3x \\ -x_2 \end{bmatrix}$$

Which atomic reliantants

$$\frac{|a_2|}{|A|^2} = \frac{1}{\left|\frac{1}{3}(38a_1^2 - a_2^2) - A\right|}$$

$$= \frac{3}{3}(3)$$

$$= \frac{3}{3}(3)$$

since the accordant multiplied on a the normalized coolers which is a ...

76. (5)

$$A = \begin{bmatrix} -8 & -3 \\ 2 & 0 \end{bmatrix} \text{ at the } \begin{bmatrix} 1 & 3 \\ 3 & 1 \end{bmatrix}$$

Characteristic equation of A. s.

$$\left| \begin{array}{ccc} x & 0 & -a \\ z & 0 & \lambda \end{array} \right| = 0$$

$$-1.5 \text{ kg}(2) = 0.50$$

$$\Rightarrow 354.54 = 0.00$$

 $35 - 6^2 + 54 + 67 = 0$  Lev Cowley Hamilton ave a "

Multiply righty Aigh opinicipes we have:

# 27

58

 $T \mapsto m \circ m \circ m \circ m \circ m \circ m \circ planetes : esupplies$ la mundat<sub>e</sub>

 $A_{n,s,s}$ ethr $\phi_{n,s}$  , simplified congular  $\dot{\Theta}$  will we. multiply 200 feet and the office-incorporati numicles are laptime walls to a vizit or m get AC and then AINAIN Laturations to multony AD With A. Berleich müllerleichens albatener, niterace

Tenomoure POH, two multary OH instructions: Ide number of multiplications recursor would.  $ce \ge \lambda \wedge N + p_0$  ge.  $C^{op} \ge d$  then  $A \times C \times C$ muticle and some moticals  $\tilde{\sigma}$  with  $Q\tilde{\sigma}$  . For the mudal colored regulated in law method is

theriese, the similar is intalled as emical see. Упрографија на на об⊊бија 18.

# 78. (b)

is not the external named given of the |A|

$$\begin{array}{lll} & = 2\left[ 2 + \left( 1 + \frac{1}{2} \right) + \left( 1 + \frac{1}{2} \right) + \left( \frac{1}{2} \right) + \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right) + \left( \frac{1}{2} + \frac{$$

#### 79. (a)

The given mains can be marsia med into the matrix given in options toy tot and "d) beelements  $q\mapsto a$  is a little goe of 0 = a b + C $= i \mathcal{O}_{i}$  any colony at each i

## Option (b):

$$\begin{vmatrix} 1 & x & A^2 & & 1 & x + 1 & x^2 & 1 \\ 1 & y & y^2 & \frac{C(B)}{G(H_1)} & x^2 & y + 1 & y^2 & 1 \\ 1 & x^2 & & 1 & x + 1 & x^2 & 1 & 1 \end{vmatrix}$$

Sption (c)...

#### Coton (d):

Qiyalon (e): We can show the ptyce metric connotice converted into option (at without coing at so unin exchange of remai $\mathbb{I}[x]$  at  $y\in \mathbb{I}[x]$  so  $y\in \mathbb{I}[x]$ простанциян, являет с в явы то в Есо.

$$\begin{vmatrix} 1 & x^2 & 1 & x + 1 & y(x+1) \\ 1 & y & z^2 & z^2 & 1 & y+1 & y(y+1) \\ 1 & z & z^2 & 1 & z + 1 & z + 1 \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & \\ & & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & \\ & &$$

### 80. (b)

$$\mu = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 0 \\ -1 & 1 & -1 \end{bmatrix}$$

rada sima ki 🗅

... dimension of null stages of A = 3 + 2 = 1.

#### # !. !c!

Final Library - 6.55<sup>2</sup> Listania Interpreta des 2015. தத்துறையும் திரும் (இவர்கள்) கூடிக்க கிரும் கூ libect are inequivilently in-

### **32.** (3)

$$\begin{vmatrix} 2 & 2 & x \\ - & -1 & | z_2 | & 0 \end{vmatrix} = \begin{vmatrix} -7/7 \\ 2 & 2 & 0 \end{vmatrix}$$

$$2x - 2x = 0$$

$$-x - x = 0$$

$$-x - x = 0$$

$$-x - x = 0$$

i.e. and a property of the society of

esent ensignaturitos o crituMille

# 93. (a, d)

ro land olgan vector,

$$\begin{bmatrix} -1 & \text{iff } x_1 \\ -1 & \text{iff } x_1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$= (a - b_1 + 0) \text{ and } x_1 + b_2 = 0$$

$$\text{clearly}, \qquad \begin{bmatrix} a_1 \\ x \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$= \begin{bmatrix} a_1 \\ a_2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$= (a_1 - b_2) = 0 \text{ and } x_1 = b_2 = 0$$

$$\text{clearly}$$

$$= \begin{bmatrix} a_1 \\ a_2 \end{bmatrix} = \begin{bmatrix} a_1 \\ 0 \end{bmatrix} \text{ satisfy}$$

Tigguiter woodig is solve or the given his area  $\left\{ \left[ \left( \frac{1}{n} \left( \mathbf{u} \right) \right) \right]_{n=1}^{\infty} \right\}$ 

# 84. (c)

- i) the Elgen values of symmetric partial [A<sup>T</sup> = A], subgroup yield.
- (ii) the Light value of sweet-y in eide molder(a) =4(a)a a incorporaty magnitude zews.

# 85 (4)

$$\begin{aligned}
& \lambda \lambda = s \lambda x \\
& \begin{bmatrix} s & s \end{bmatrix} \begin{bmatrix} -1 \end{bmatrix} = (-1) \begin{bmatrix} -1 \end{bmatrix} \\ -1 \end{bmatrix} \\ & s & s = 1 \\ & s + s = 1 \end{aligned} \qquad (1) \\
& b & c = 1 \\ & c + s = 1 \\ & c + s = 1 \end{bmatrix} = (-1) \begin{bmatrix} -1 \end{bmatrix} \\ & c & c = 1 \\ & c + s = 1 \end{aligned} \qquad (6)$$

$$\Rightarrow & a \in Ab = -b & c \in Ab \\ & c + 2b = a & c \in Ab \end{aligned}$$

) connected as ( ) so a (  $h_1$  a=0 and b=1From equation (ii) and ( a=4 and d=3

# 08. (a)

$$|A - 32| = 0$$

$$|B - \lambda - 3| = 0$$

 $\begin{aligned} & (3-3)(\sqrt{3})^{-1}(2) - |\omega| + |\omega| + \sqrt{3} + \sqrt{3} + 3 + 4\sqrt{3} + 2\sqrt{3} + 2\sqrt{3} + 2\sqrt{3} + 2\sqrt{3} + 4\sqrt{3} + 2\sqrt{3} + 2\sqrt{3$ 

$$334 + 5 \cdot 3 \cdot 35 + 34 = 173 = 113 - 55 + 25 \cdot 122 + 15 = 0$$
  
 $32 - 233^2 + 555 = 0$   
 $33 - 233^2 + 355 = 0$   
 $333^2 + 235 + 355 = 0$   
 $333^2 + 235 + 355 = 0$   
 $33 - 35 + 35 = 0$ 

Sergiption Hashavatic Still

# U/L (B)

 $S_{ab, m}$  in a  $t \in \mathbb{R}$  constitution below

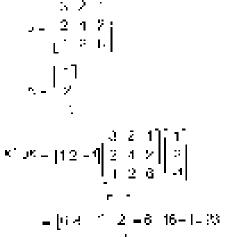
- in increase size 1 i i ii.
- ,č) Padakvečkič
- [9] nocisie 25 € N €
- [6] 185 8 920 3 4 5
- i Pinta dispollini i

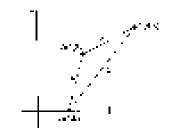
Shipping (B.) Opinible assert at Therefore this explain

.5g, 9ja ⇒r ect 1 la buc.

Conside Material Lattice (Fig. 4) with Assumption  $V_{a,b} \in \mathcal{F}_{a,b}$  and  $V_{a,b} \in \mathcal{F}_{a,b}$  a

### ea. Got.





Area of God anala.

$$= \frac{i}{2} \left[ w(y_1 + y_2) + v_1(y_1 + y_2) + v_2(y_1 + y_2) \right] = \left[ \frac{3}{2} \left[ (28 - 60) - 3 \right] + \frac{1}{2} \left[ (28 - 60) - 3 \right$$

90. (d)

$$\begin{aligned} (r + G)^2 &= F^2 + CO + QF + Q^2 \\ &= F \cdot F + P \cdot O + Q \cdot P + Q \cdot Q \\ &= F^2 + rO + QP + Q^2 \end{aligned}$$

92. (3)

Made talkplacker and parinagage.

91. Sec.

$$A = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 1 & 2 & 2 & 2 & 1 \\ 1 & 2 & 0 & 1 & 2 \end{bmatrix}$$

$$H_{\rm e} \simeq H_{\rm e} - P_{\rm g} = P_{\rm g}$$

$$\frac{3}{12} \cdot \frac{2}{12} \cdot \frac{2}{13} \cdot \frac{1}{13}$$

$$\frac{3}{12} \cdot \frac{2}{13} \cdot \frac{1}{13} \cdot \frac{3}{13} \cdot \frac{1}{13}$$

$$\frac{3}{12} = \frac{3}{12} \cdot \frac{3}{13} \cdot \frac{1}{13} \cdot \frac{3}{13} \cdot \frac{1}{13}$$

$$\frac{3}{12} = \frac{3}{12} \cdot \frac{3}{13} \cdot \frac{1}{13} \cdot \frac{3}{13} \cdot \frac{1}{13}$$

$$\frac{3}{12} = \frac{3}{12} \cdot \frac{3}{13} \cdot \frac{1}{13} \cdot \frac{3}{13} $

$$B_2 = B_2 - 2B_1$$

Clare ranging Column 1 and Column 2 and In Agri-. 31600056

$$\Delta = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 3 & 6 \\ 2 & 0 & -0 & 4 \\ 3 & 0 & 8 & -0 \end{bmatrix}$$
$$= \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 4 \\ 0 & -8 & 10 \end{bmatrix}$$

$$16161 - 1935$$
 , leagues main a

$$4 = \begin{bmatrix} 9 & 6 & 0 \\ 2 & 19 & 8 \\ -9 & 9 & 1 \end{bmatrix} = 99 \begin{bmatrix} 1 & 0 & 0 \\ 2 & 6 & 8 \\ -9 & 0 & 1 \end{bmatrix}$$

√ви дассттоптом гозгож,

$$A = -D_{2}/A(1 + \sqrt{2})^{2} \times L^{2} + R_{1} \times L^{2} + 2 \times L^{2} + 3 \times L^{2}$$

95. **S**a.

Date minor st⊿ ± 5

| Delerminantal R = 16

Determinant on AB = | A∏ S |

$$-40 - 20 - 200$$

97. Ha

$$\mathbf{z}\mathbf{l}_{i} = \begin{bmatrix} 0 & \mathbf{a} \\ \mathbf{b} \end{bmatrix}$$

Haven trace 
$$(A) = 0 = 0$$
 . As

$$(3) \qquad \qquad z_{n} = x_{n}(4) \log_{10} x_{n}^{2}$$

Bullet villig always popular maximum valua (1

 $t(14 + 24 + \epsilon^2) \approx t \cos t \cos t \cos y = 0.$ 

Not introducing the otherwise or in a

$$\frac{n|A|}{dt} = |A| \cdot 2n + 0$$

$$2.084 + \frac{6^2 \cdot 4}{36} = 2.000$$

Alieu Kirvel aktionicament i tomovitri, myaller 5.14 x 74 7/ 1/9

96 Sci.

$$P = \begin{bmatrix} x \\ 2 \\ 7 \end{bmatrix} + 0.06$$

$$A = \begin{bmatrix} 3 & 10 & 10 \\ -2 & 30 & 30 & -3 \end{bmatrix} A = 0$$
$$\begin{bmatrix} 7 & 33 & 35 \end{bmatrix}$$

ੇ 6 ਹੈ। ਪੁਰਮੁਸ਼ ਅੰਸਥਾਨ ਨੀ ਸ਼ਿਲੀਵਿੱਕ <sub>ਵਿ</sub>ਹਾ<sub>ਰ</sub> ਸ਼ੁਰੂ ਸ਼ੁਰੂ ਸ਼ੁਰੂ 2979. ਤੋਂ ਸ਼ਿੰਗ ਦਿਵ ਤੋਂ

#### 103. (2)

$$\Delta = \begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix}$$

$$\Delta = \begin{bmatrix} 0^2 - 7^2 & 0 \\ 0 & 1 \end{bmatrix} + 25^2 = 43^2$$

Inprove incenses in the total A

#### Case it

$$(\cos x, 20) = 0$$

 $\Rightarrow$  A is ((1.5), 5...5) AAf also has no be not provide in a rank (B) to also equation  $0.7^{\circ}$  eresists (2)

## Ceae I ·

and 
$$(A) \in \mathbb{R}$$

— A cannot be not for Piyles renot as full, ones  $\mathbb{N} = \mathbb{A}^2$ 

$$a(t) = \frac{1}{2} \mathbf{R} + [AA^{\dagger}] + [A + A^{\dagger}] = [A^{\dagger}]$$

For rank (A) = 0, those state rank (A) = 0, the state rank (B) is also a 2-th with notice to (A) = 0, so that (A) = 0, therefore that (A) = 0 and the equal to A. The left A in this case state rank  $(A) = \sup\{A\}$ 

## Case III:

$$\operatorname{cork}(A)=2$$

Fig. 4 may to the not singular, i.e.  $\frac{1}{4} > 0$ . Therefore,  $\frac{1}{4} 9 = \frac{1}{4} A = 4$  where 4.0 = 8.0 rank (0) = 2.

They give a intersection shortest  $(A) = \max(M)$ . Therefore that the cases  $\max(A) = \max(M)$  for each of A in A then then A is A in A.

# 501 (b):

The augmented matrix for this western is

$$\begin{bmatrix} 1 & 2 & 2 & \alpha_1 \\ 3 & 3 & 3 \end{bmatrix} = a_{k-1} a_{k-1} a_{k-1} \begin{bmatrix} 1 & 2 & 2 & 3 & 3 & 1 \\ 0 & -2 & -2 & 3_{k-1} a_{k-1} \end{bmatrix}$$

Matrixania of a matrix is some places. We shall see that the Rank/V) = 2.

 $((a,b)) \in \mathbb{R}^{n \times n \times n}$  into a not depend on table  $((b,c) \in \mathcal{O}_{\mathcal{O}})$ .

Teyf (A) — Rondy Hollis Northern (keft.com) — S Thermore the session is not extremed to minite sin many southers

# 102. (a)

$$\begin{bmatrix} 0 & 3 & 5 & 1 & 2 & 5 & 4 \\ 3 & 2 & 1 & 4 & 5 & 2 & 4 \\ 1 & 2 & 5 & 4 & 2 & 2 & 5 & 5 \end{bmatrix}$$

$$\begin{bmatrix} P_1 \rightarrow P_2 - 2P_3 & 2P_4 & 2P_4 & 2P_4 & 2P_4 & 2P_4 \\ P_2 \rightarrow P_2 - 2P_4 & 2P_4 & 2P_4 & 2P_4 & 2P_4 & 2P_4 \end{bmatrix}$$

$$\begin{bmatrix} P_1 \rightarrow P_2 - 2P_4 & 2P_4 & 2P_4 & 2P_4 & 2P_4 & 2P_4 \\ P_2 \rightarrow P_3 - 2P_4 & 2P_4 & 2P_4 & 2P_4 & 2P_4 & 2P_4 \\ P_4 \rightarrow P_5 - 2P_5 & 2P_4 & 2P_4 & 2P_4 & 2P_4 & 2P_5 \\ P_5 \rightarrow P_5 \rightarrow P_5 & 2P_4 & 2P_5 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_5 \rightarrow P_5 & 2P_5 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 & 2P_5 \\ P_6 \rightarrow P_6 \rightarrow P_6 \rightarrow P_6 \rightarrow P_6 & 2P_5 \\ P_6 \rightarrow P_6 \\ P_6 \rightarrow $

Dark  $\mathcal{L}[A][B]$  = Park of  $\mathcal{L}$  standard in white  $\rightarrow$  with to tumper of equations  $x\mapsto (0.35\,\mathrm{M}_\odot)$ 

### 10S 85L

# Er-ch

iPate -29

$$\frac{9+7-1}{2-1}$$

is The unit behalf solutions to this  $s_{x}x \mapsto -s_{x}y_{0}$ , so the  $x + x + y_{0} = x/2$  and  $x + y_{0} = x + y_{0}$  solution.

184 (6)

105. (c)

 $S\times C$  level common is many c with the components of the engineering constraints of the Configuration of the C

 $x_1y_2 = x_1y_2 + x_2y_3 = 0$  because they x = cuttoners .

$$\Delta v_0 = 0.$$

$$\left[ x_1 \cdot x_2 \cdot x_2 \right] \begin{bmatrix} y \\ y_2 \\ y_3 \end{bmatrix} = 0$$

108. (4)

The character stoles depend a  $(\chi_{ij})_{i=0}$ 

$$i_{\Phi} = \frac{b \cdot a \cdot b}{-a \cdot b - b} = 0$$

 $2 \cdot (2 + 0) \times 1 \cdot 3 + 3 + 5$ 

$$\mathfrak{M} = -\lambda^{-1} - \lambda^{--1} 2 = 0.$$

or 
$$b = \frac{1 + \sqrt{1 + 78}}{2} = \frac{1 + 7}{9} = 2$$

(20) maps along  $\omega \lambda = 4$ , we have

$$\begin{bmatrix} A - \lambda f' \\ 1 \end{bmatrix} = \begin{bmatrix} \frac{1}{2} - \lambda & -\frac{1}{2} \\ \frac{1}{2} - \lambda f' \end{bmatrix} \begin{bmatrix} \lambda f \\ \lambda f \end{bmatrix}$$

$$\mathrm{cr.} \qquad \begin{bmatrix} -9 & 2 \\ -9 & 2 \end{bmatrix} \frac{\pi}{p} = 0$$

which plans only one independent equation is  $\theta_0 + 2 \phi = 0$ .

$$\sim \frac{2}{2} + \frac{7}{3}$$
 gives eigen vector (2.43)

Observational  $\lambda = - \chi_{0}$ 

$$= \frac{\left| -\frac{1}{2} - \frac{\alpha}{2} \right|}{\left| \frac{\alpha}{2} - \frac{\alpha}{2} \right|} = 3$$

which gives |z-v| = 0 (inly  $a \in I$  described evaporation).

$$x = \frac{x^2 - y}{2}$$
 which gives  $\{x_i^2\}$ 

Set the eigen vectors 
$$\frac{[s]}{s}$$
 and  $\frac{1}{s}$ 

107. Sol.

. Cliaracteristic equation to  $|A|/\Omega^2=0$ 

$$\begin{vmatrix} -2 & -1 \\ -6 & -11 & \lambda - 3 & -1 \\ -4 & -11 & 5 & \lambda \end{vmatrix} = 0$$

$$= -M[55 + 113 + 53 + \lambda 1 + 36] \quad \text{if } 56 + 6\lambda + 36$$

$$= -[60 + 133 + 36] + 6$$

$$= -A(\lambda^2 + 6\lambda) + 1 + 1(55 + 6) + 6\lambda + 3$$

$$= -A(\lambda^2 + 6\lambda) + 1 + A(-6 + 6)$$

$$= -A(\lambda^2 + 6\lambda) + 12 + 3 = 0$$

$$= -(3\lambda + 6\lambda) + 2(\lambda^2 + 6\lambda) = 3$$

$$= -(3\lambda + 6\lambda) + 2(\lambda^2 + 6\lambda) = 3$$

Maximum experiedud si Torking, (2) (1.2.). Es a of hermium and immum again where

3.4 - 1.4 - 2.4

$$=2:$$
  $-\frac{2}{1}$ 

108 80

$$\begin{array}{ll} SP(A, A^3 = 1, Ag(A^3) = 2g(f) = 1 \\ \Rightarrow & Eg(A)^2 = 1 \\ \Rightarrow & 2g(A) = 1 \end{array}$$

Dietektio, he positive again valua at Alei + 1.

109 Sel.

This sale of the politication of the agenometric companion of the political production of 2 4 and dynamics in produce the first plant, who 0.

fin Sol.

$$\begin{bmatrix} 1 & 6 & 0 & 0 & 1 \\ 0 & 1 & 2 & 1 & 0 \\ A & 0 & -1 & 1 & 0 \\ 0 & 1 & 1 & 1 & 0 \\ 2! & 0 & 0 & 0 & 1 \end{bmatrix}, \text{ at } \lambda = \begin{bmatrix} a_1 \\ a_2 \\ a_3 \\ a_4 \\ a_5 \end{bmatrix}$$

$$\begin{aligned} AR &= AR \\ \Rightarrow & \quad x_1 - x_2 + kx_1 = \kappa x_2 \\ \Rightarrow & \quad x_2 - x_2 - x_1 = \kappa x_2 = \kappa x_1 = \kappa x. \end{aligned}$$

(i) 
$$k \neq 0$$
  
 $587 = x_1 = x_2 = 0$   
 $K = Y_1 = Y_1 = ^{-1}$   
 $\Rightarrow Y + 2x_2 = 8x_1$   
 $\Rightarrow Y_2 = 30$   
 $y = x_1 + x_2 = x_2$ 

(ii) 
$$k=0$$

is Fluori within N=0

 $\lambda$  . There are a profinct pides (values: 0.45). Freques, of their zero eigen heldes (2.4.3). A

 $\kappa = 1$ 

# 111. (8)

Hair en man alon ni noto minami si**pos in**el inerees, sa milessa one esse ve eigen value.

into orthomatic social early life veter fine (1) of the ratio she gather this social beautiful to the ratio of the ratio o

# 112. (n)

Property of decomment is in a system of two colors of colors are presented by all the interpretable and coloring the colors of t

### 113. Edi.

Circle regard loss 1 who 2 is a charactery spectrons of the type of  $P_{\rm c} = \kappa P_{\rm c}$  and  $C_{\rm c} T \lambda C_{\rm c}$  measure  $c_{\rm c}$  the determinant will over one spectrom on the order of setting  $k_{\rm c}$  to

 $35 \pm 6 \text{ revenue automition.} = \begin{bmatrix} 3 & 4 & 4 \\ 7 & 3 & 105 \\ 13 & 6 & 617 \end{bmatrix}$ 

We the regularize patential aut=0

#### 114 (c)

Long Methods

$$A = \begin{bmatrix} 1 & lanx \\ -lanx & 1 \end{bmatrix}$$

$$A^{2} = \begin{bmatrix} 1 & -1\sin x \\ -2\cos x & -1 \end{bmatrix}$$

$$A^{2} = \frac{1}{|A|} [\cos x] (A)^{2}$$

$$= \frac{1}{|A|} [\cos x] (A)^{2}$$

$$= \frac{1}{|A|} [\sin x] [\cos x]$$

$$= \frac{1}{|A|} [\sin x] [\cos x]$$

$$= \frac{1}{|A|} [\sin x] [\cos x]$$

$$= \frac{1}{|A|} [\sin x] [\cos x] [\cos x]$$

$$= \frac{1}{|A|} [\sin x] [\cos x] [\cos x]$$

$$= \frac{1}{|A|} [\sin x]$$

$$= \frac{1}{|A|} [\cos x]$$

$$= \frac{1}{|A$$

## Short Method:

$$\begin{aligned} \operatorname{Trest} & \left[ A B - \left[ A \right] \right] D \\ & \left[ A^T A^T - \left[ A^T \right] A^T \right] \\ & + \left[ A \right] \times \frac{1}{\left[ A \right]} - 1 \\ & \left[ \operatorname{Natc} \left[ A^T \right] + A \otimes \operatorname{d} A \right] - \frac{\lambda}{\left[ A \right]} \right] \end{aligned}$$

$$x = \begin{bmatrix} 2 + 37 & -7 \\ 1 & 2 - 37 \end{bmatrix}$$

$$x = \begin{bmatrix} 2 + 37 & 1 + 37 \\ -1 & 2 - 37 \end{bmatrix}$$

$$x = \frac{1}{2} \begin{bmatrix} 4 + 37 & 3 \\ -2 & 24 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 37 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37 & 27 \\ -2 & 27 \end{bmatrix} \begin{bmatrix} 4 - 37$$

# 115. (c)

Raise selenta in wiw.l. Le sovier nutiple or troit focalité avrient get in ly chen preze o tovoir alew Especiaeconsonnel A.

#### Allernative:

Bodeuse di thomino diprordo gravita il la ini wil Javaso

### 117 Sel

Criven 848 am of explations has no colution in the lines tre percisite in mensioner allege (s)

### i8. (a)

$$\begin{split} & 2 \cdot (\lambda_1 - \theta_{11} x_1 + \lambda_{12} x_2 + 0) \\ & 2 \cdot (\lambda_1 - \theta_{22} x_2 + \theta_{12} x_3 + 0) \\ & 2 \cdot (\lambda_1 - \theta_{22} x_2 + \theta_{12} x_3 + 0) \\ & - \left[ \frac{\partial}{\partial x} + \frac{\partial}{\partial x_2} x_2 + \frac{\partial}{\partial x_3} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_1} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] - \frac{\partial}{\partial x_2} \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_2 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_2} x_3 + \frac{\partial}{\partial x_1} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} x_3 + \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_2} \left[ \frac{\partial}{\partial x_1} \right] \\ & - \frac{\partial}{\partial x_1} \left[ \frac{\partial}{\partial x_2} \right] \\ & - \frac{\partial}{\partial x_1} \left[ \frac{\partial}{\partial x_2} \right] \\$$

If  ${\mathcal A} \neq \emptyset$  liber  ${\mathcal A} {\mathcal A} \in {\mathcal B}$  can be write. We

 $\lambda = A$  Self-conductions as the self-conductions

If  $|\hat{H}| \geq 0$  distributes  $|\hat{A}| = 0$  describes the

If  $|A| \neq 0$  then at the recritectum matter with A are it early induced cont.

#### 119. So.

$$\begin{split} & P_0 \rightarrow P_0 - P_1, \ P_2 \rightarrow P_2 - 2P_1 \\ & | 1 - 3 - 3 - 1 - - 1 | \\ & | 0 - - 1 - 1 - 1 - 2 | \end{split}$$

| Combined to 2| | Combined they solution

$$p(A \mid \Omega) = \rho(\Omega)$$

= 197 kin berich variabled

$$\beta(A \cap D) = 2$$
$$\lambda - \lambda = 0$$
$$\lambda = 2$$

$$\begin{aligned} \cos & -gy + ix = 0 \\ \cos & -iy + px = 0 \\ \cos & -iy + nx = 0 \\ -\frac{1}{2}n \cdot n \cdot x = 0 \\ -\frac{1}{2} \frac{n}{2} \cdot \frac{n}{2} \cdot \frac{p}{2} = 0 \end{aligned}. \text{ The system is } A_0 = 0$$

his is a nomegeneus system. Nues a system exinto surisis, soluter i i papa.

$$2x = \begin{bmatrix} 0 & Q & 1 \\ Q & C & Q & -1 \\ 1 & 0 & C \end{bmatrix}$$

$$\begin{array}{ll} \partial (Q^{2} - Q^{2}) - \partial (Q^{2} - Q^{2}) + \partial (Q^{2} - 1) = 0 \\ \partial^{2} - Q^{2} + \partial^{2} - \partial (Q^{2} - 1) \end{array}$$

$$\theta=\psi=r$$
 substruct the active equation

As a figure q=r . Difference on the parity prime from the other cases we give any dy we grow holder

The elorer the coirob option is (a) often is  $\phi + \phi - r = 0$  or  $\phi = \phi = r$ 

# 121. (5)

Fig. : 
$$AX = 0 \label{eq:posterior} p(A_{(0,n)}) = c_0 J < c < n \ .$$

p = Number of necessariators and one - nullty. We know not

$$\begin{aligned} & \text{and} = \text{in}(\mathbf{I})_{i,j} = \mathbf{n} \\ & i = \mathbf{n} = \mathbf{n} \\ & j = \mathbf{n} = \end{aligned}$$

# 122 (c)

The Higen values  $(x_1, y_2) = 0$ .

$$\begin{bmatrix} 3 - 4 & -2 & 9 \\ -2 & 4 & 4 & 6 \\ 9 & -8 & 5 - 3 \end{bmatrix} = 0$$

$$\Rightarrow (J - x) \in \mathbb{R}^{n} : \{x \in \mathbb{R}^{n} : x \in \mathbb{R}^{n} : \{x\} = 2(21 + 42 + 12) + 2(412 + 3 + 32) = 1\}$$

$$(\pm y)^2 = (3)^2 = 63 = 2 = 0$$

Ninty if and a squale this equation

Lanca Briefles, eige visitae in 1906

suggest of  $\phi$  and  $\phi$  and  $\phi$ 

128. Bol.

124. 50.

125. Sel.

$$\begin{aligned} \beta' - a\beta &= 0 \\ \frac{1_{A} - \lambda_{A} - \beta_{A}}{2(1 - \lambda_{A})} &= (1 - \lambda_{A}) (1 - \lambda_{A}) &= 0 \\ 2\beta - \beta \lambda_{A} - \beta &= 0 \\ (3 - \alpha_{A}) (\beta_{A} + \beta_{A}) &= 0 \\ &= 0 &= 0 \end{aligned}$$

Movinium alpan value is 101

198. (a)

$$\text{Left} = 0.4 \pm \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{2^{1}}{1}$$

Sixed a quantities k=1

Let  $X' \mapsto A = A \times A = A$ 

thus -1

$$\Rightarrow \begin{bmatrix} a_2 + 2a_1 \\ \vdots \\ a_1 + 2a_2 \end{bmatrix} = 0$$

patients, which are self-arm  $r_1 = -cV$ 

$$9: 1 \mapsto \text{eight watter} = \mathbb{E} \begin{bmatrix} 1/2 \\ -1/4 \end{bmatrix}$$

The along the ways  $=\frac{1}{12}$  1-2

$$\operatorname{ting}(x_0/x_1) = -\frac{32}{32} = \overline{3}$$

Onto polion (a) ( ) if (2, 4) if  $(2 \times 4)$  is some reflection thereby  $(3 \times 4) \times 4 \times 4$  in Constant

127. (3)

ma, and all be the eigenvalue of molds A

$$\lambda = \frac{\lambda_{11}}{\lambda_{12}} \approx \frac{\lambda_{12}}{\lambda_{12}} (2^{n} \psi + \lambda_{12})$$

Sun с ејсепраци

$$-\lambda_1 + \lambda_2 = 2 + \alpha \qquad \qquad 90$$

Productions generated

$$= \lambda(x, -\gamma, -\gamma) \qquad \qquad \text{a.T}$$

$$\frac{\lambda_{+}}{2} = \frac{3}{7}$$

का स्वाहता है।

$$SU = k_0 = 0 + p$$
  
 $4k_0 = 0 + p$ 

$$\lambda_{\underline{z}} = \frac{\alpha_{\underline{z}}^{-1}}{\underline{z}}$$

The Highlight (i)

$$-10^{-2}$$
  $-20^{-2}$ 

$$\Rightarrow -|q|\frac{n-2}{2}e^{\frac{2}{3}}-2p^{-\frac{3}{2}}$$

$$\frac{1}{2} = \frac{1}{2} \sum_{i=1}^{n} \frac{1}{2}$$

$$\begin{bmatrix} y - y & 1 \\ -y - y \end{bmatrix} = 0$$

$$(2-\lambda)(p-\lambda)-1=0$$

$$\lambda_1 = (\phi - 2)y_1 + (2\pi - 1) = 0$$

By fallik give designation from options.

By pulling pages (ii)  $\frac{14}{6}$  in above equations

gives value 
$$5.\frac{6}{3}$$

Hence field of we algorization =  $\frac{s}{5/5} = 3$  , . So optimitely a sum on t

## 123. (b)

Bo so gular matry

According to be periods of a general to freedot on eight we next to  $A_1 = 0$ .  $\Rightarrow$  Allegs tions of the eight value is zero.

### (29. (b)

Characteristic englisher |A-M|=0

$$\frac{(3+3)[(1-3)(2-\lambda)-0, \quad (3a-1)] = 0}{2a = (3a+1)(3a+2)(1-2)}$$

$$= -(2k+1)!(2k^2+6k+6)!$$

$$\frac{\alpha_{ijk}}{\alpha_{ik}} = -i\cos^2 - 12\lambda = 1.5$$

 $\frac{1}{2k^2-12k+1}\frac{(\log k) \exp (man \sin n n \cos k)}{1}$ 

$$3 = \frac{3 + \sqrt{144 - 13^3}}{6} = -2 + \frac{1}{\sqrt{3}}$$
$$3 = -2 + \frac{1}{\sqrt{3}}$$

$$2z = \left[ -3 + \frac{1}{\sqrt{2}} + 1 \right] \left[ -2 + \frac{1}{\sqrt{2}} + 2 \right] \left[ -2 + \frac{1}{\sqrt{2}} + 2 \right] \left[ -2 + \frac{1}{\sqrt{2}} + 2 \right]$$

$$= \left[ -\frac{3}{\sqrt{2}} + \frac{3}{\sqrt{2}} + \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + 1 \right] + \left[ -\frac{1}{2} + \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + \frac{1}{2\sqrt{2}} + \frac{1}{2\sqrt$$

# 100. (E)

For a matter containing complex in a per leight, whites are real, and only in

$$|A = A^{2} = (\overline{A})^{2}$$

$$|A = \begin{vmatrix} 10 & 0 & f & 4 \\ x & 20 & 2 \\ 4 & 2^{2} & 10 \end{vmatrix}$$

$$|A = \begin{bmatrix} 10 & \pi & 4 \\ A^{2} = (\overline{A})^{2} & (1-f) & 20 \\ 4 & 2 & 10 \end{bmatrix}$$

≝үкөмин п<u>ү</u>тнын,

Писа — Епін і біріде і сульсь

Depiningn. ≥ Product chaper values

16 
$$-4\Delta t + -7$$
  
5  $-4\lambda = -6$   
 $-2\alpha - -12$   
 $-2\alpha + 5$ 

#### 133, 16%

Civen that 
$$M^* = 7$$
 or  $M^{4k} + 7$  or  $M^{4k} + 6 = 7$   
 $2 = -M^{4/2} \times 3 = M^{4k} + 7 = 67$   
 $2 = -M^{4/2} \times 3 = M^{4k} \times 4$ 

134. bol.

$$1 \cos c \cos A = 14$$
  
a  $1 \cos - 2 \sin B = 14$ 

ĮЩ

$$4 + 0 = 7$$

$$4 + (4) = 100$$

$$4 + 3 + 7$$

$$5 + 0 + 2 + 4 = 100$$

$$4 + (0 + 0)$$

$$40 + 0 = 100$$

$$40 + 0 = 100$$

$$40 + 0 = 100$$

$$40 + 0 = 100$$

From equation (damp (it)

 $a=9-6\cdot 2$  $|\mathbf{q}| = 2^{n} \cdot N + N$ a n = 1. 얼=1.

195 (c) Book to both Dalk (A).

**86.** (c) 
$$\begin{vmatrix} 2 & 1 & | |x| | + ||x|| \\ 1 & |x| ||x|| + ||x|| \\ 2x + |x| + |x|| \\ 3x + |x| + |x|| \\ 3x + |x| + |x|| \\ 3x + |x| + |x|| + |x|| \\ 3x + |x| + |x|| + |x$$

Π') ×a ván mejor exis dong ∫

187 (c)
$$\begin{bmatrix}
2 \\
3 \\
-7 \\
-7 \\
-7 \\
-7
\end{bmatrix} = \begin{bmatrix}
1 \\
3 \\
-7 \\
-7
\end{bmatrix} + \begin{bmatrix}
1 \\
3 \\
-7 \\
-7
\end{bmatrix} + \begin{bmatrix}
1 \\
2 \\
-7
\end{bmatrix} + \begin{bmatrix}
1$$

188. [6] We non-represent the export of equals a fit was is

$$\begin{bmatrix} 2 & -\alpha \\ 2 & 0 & 0 \end{bmatrix} \begin{bmatrix} \alpha & -\begin{bmatrix} \beta \\ \gamma & - \end{bmatrix} \\ \beta & 0 & -\alpha \end{bmatrix} \begin{bmatrix} \gamma & -\begin{bmatrix} \beta \\ \gamma & -\end{bmatrix} \end{bmatrix} \begin{bmatrix} \alpha & -\alpha \end{bmatrix}$$

By each associated and  $\hat{\Omega}_{2} \rightarrow P_{2} - (8 K_{\parallel} - M_{\parallel})$ 

Paraganological of eyestern, n = 20 , D = 0.

138 (c)
$$\begin{bmatrix}
2 & x^{4} \\
-1 & 3
\end{bmatrix} \begin{bmatrix} x & -1 \\
y & -1 \end{bmatrix} \begin{bmatrix} x \\
x & 3x \end{bmatrix}$$
1 2  $-8 - 2$ 
4 8 30  $\begin{vmatrix} x & 2x \\
y & 12 & -26 \end{vmatrix}$ 
1 3 $y = -23$ 
6  $-2y = -3y$ 
2  $-2y = 2$ 
2  $-2y = 2$ 
3  $-2y = 2$ 

14D (c)

 $\mathbf{c}$ 

1 - m < n (system may subtract economics) PROPERTY.

2a = 12 $J = \emptyset$ 

- $\mu_{\rm color} > \pi_{\rm color} \times \pi_{\rm color} \times \pi_{\rm color} + \pi_{\rm color} \times  gajatek i na yina sa so indoniyada.
- III.  $A_{i,j} = A_{i,j}$  (some evolutions in the new decidation  $\delta$ алд релос т<sub>ис</sub>у (чин жай бал эффо**т**сов). ğış gergili ik anı matı.

141 (d)

 $\bigcirc$  a superficient  $X \ge 0$  coupling relative  $M = \frac{1}{2} \frac{|X|}{|X|}$ 

$$\label{eq:continuous} \omega_{\theta} = \left( g + g (R - g ) g - G (R - G ) \right)$$

f(m, j, k) = f(m, j, k)

$$t = kx + m + ma + cx = 0$$

$$y = y - \phi - yy - (1 - \sqrt{y}(1 - x)) = 0$$
.

$$|||\cdot||_{\mathcal{L}} = ||\underline{\mathcal{L}} + ||\underline{\mathcal{L}} + ||\underline{\mathcal{L}}| + ||\underline{\mathcal{L}} - ||\underline{\mathcal{L}}|| + |\underline{\mathcal{L}}||$$

J=3 to J in J if J is

+ )). It satisfied the eq. ( ) ) of  $2 = 2, 3, \pm 6.633$  for servation to be ( ). For all provided coursed unco148. Sa

110. (a):

A Eigen values of 4 
$$\frac{2}{3}$$
 are positive

2 Y 2 CD5 FG Michinity designed on barriers

$$\begin{array}{cccc} 2 & 1 & & \\ 1 & 8 & 6 & \\ 20 & & 80 & \\ 88.8 & & \\ & & 3 & 8 & \\ & & & \frac{1}{2} & \\ \end{array}$$

171. (d)

 $\mathbb{T} \otimes \times \times \mathbb{R} \times \mathbb{R} = \mathbb{R} \times \mathbb{R$ 

$$\psi^{2}(-\infty)=(r-m)(r-m)=m^{2}-m^{2}$$

which a postloid any when well to:

#### 145 Fol.

, жи сідет мей язіяній — палу фонд Эріі 3 тот и Э

The finid eigen value in as the  $\lambda \to 0$ 

$$\begin{aligned} dt_{min} &= |t| \lambda_{min} - |t| |t| \\ \Rightarrow & A = |t| - |t| / (2 - m) \times 3 \\ & + |t| + |t| / (3 - m) \\ & + |t| + |t| / (3 - m) \end{aligned}$$

146 (e)

$$\sigma = \dot{A} r$$

Ерспротекняй этрад

 $550.0251\pm \pm 2$ 

$$c(t) \leftarrow \frac{e^{\lambda t} - e^{\lambda t}}{\epsilon - e^{\lambda t}}.$$

Bit gas to due to not all conditions.

$$\gamma(x) = \exp((0 \cdot x)^{\alpha})$$

$$F(t) = \begin{bmatrix} \mathbf{g}^{t,t} & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & \mathbf{g}^{t,t} & \mathbf{0} \end{bmatrix} \begin{bmatrix} \mathbf{0} \\ \mathbf{0} \end{bmatrix} = \mathbf{0} F^{t,t}$$

147 (B)

m Xix-iyə iyevvə fəriyê bərrəsəninin talak ka

ina ny samila naovanan'i Orivo poutescourouro de 614. Display

 $Z_{\rm c}$  TM  $\lambda_{\rm g}$  are High invector of  $Z_{\rm c}$  corresponding to z=z

. For Signal  $Z_2$  similar, in result in  $\mathcal{F}_2$  ,  $3 \pm 47$  is inespectating to  $2 \pm 4$ 

148 85

Consect to 
$$|\mathcal{A}| = \begin{vmatrix} \mathcal{A} - \lambda & 1 & 0 \\ 0 & \mathcal{A} - \lambda & 0 & 0 \\ 0 & 0 & 2 & \lambda \end{vmatrix} = 0$$

$$\begin{pmatrix} 2 - \lambda_1^2 \end{pmatrix} \begin{pmatrix} 2 - \lambda_1^2 \end{pmatrix} \begin{pmatrix} 2 - \lambda_1^2 \end{pmatrix} = 0$$

$$2 = 2 \cdot 2 \cdot 2$$

$$\lambda \in \mathbb{R}^{n-1}$$
 . Here is  $\alpha \in \mathbb{R}$  . Eigen vector

$$\hat{\lambda} = 2$$
 . Concoder (A  $-2.5 + -0.5$ 

The H 
$$_{1}$$
 and  $_{2}$   $_{3}$   $_{2}$ 

Not ploated by 
$$a = a$$
  $a = b$ 

.. Figure we shall be 
$$\begin{bmatrix} \hat{a} \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

Only and hala satisfact, Figure sector in opening  $\alpha (0) = 2$ 

Herconnaly no ratio i Egyptiose ⊵itago a ≥

148 Sol

Without an extent coloreds were:

 $\delta(-3, -7) + 52(-2)/21 + 32 + 78) + 4(-3) + 727 = 0$ 

$$A(7) = 11(4 - 3)A(4)(1 - 4)O(4) = 0$$

155 asi.

ം മൂറ്റോൾ പ്രദേശിച്ചു ഉപ പ്രവര്ദ്ദേശിച്ച പ്രവര്ദ്ദേശിച്ച വരു വ

15° Sal.

$$_{\perp q \geq q (\lambda)} = 1/3, \, \cdot \quad ; \, |\lambda_q = 1/2 \times \lambda = \delta$$

$$KVK_{\parallel} \left[ \left[ \left( X_{\parallel}^{-1} \right)^{-1} + \left[ A_{\parallel}^{-1} \right] + \frac{1}{|A|} + \frac{1}{8} = 0.126 \right]$$

158 (c)

By Calludy Hamilton Income:

$$\begin{array}{c} \mathcal{S} = \lambda \\ \lambda = 0.1 - 1 \end{array}$$

152. **G**o.

go pakar 
$$\frac{1}{1}$$
,  $\frac{\lambda}{\lambda}$ ,  $\frac{\lambda}{2\lambda}$ ,  $\frac{\lambda}{2\lambda}$ 

$$3.5 - 4.11 = 0$$

Foliadas karito Tiecien

$$\begin{aligned} A^{2} &= A \cdot 2 = 0 \\ A^{2} &= A + I \\ A^{2} &= A^{2} - 2 \cdot i + j = A + i + IA = i \\ &= 2A + 2I \\ A^{2} &= 2A^{2} + 1A + iI \end{aligned}$$

$$= 264 + 74 + 247 + 47 = 2141 + 127$$

$$A^{1} = 4 + 37 + 1443 + 293$$

$$= \begin{bmatrix} 283 & 122 \\ -141 & 03 \end{bmatrix}$$
$$\begin{bmatrix} x^{1} x^{1} & -12xx & 144 & 141 \\ y^{2} y & -144 & 80 & 0 \end{bmatrix}$$

154 (c)

Considerated this up with paratypassers of equal gapping is not the contain real scales.

$$_{10}$$
 ,  $A = \frac{6}{c^2} \frac{5}{4} \frac{5}{k_{B/3}}$  while satisfactiveness (5.5 d)

5. Since ||A|| = 25 and our officed |A| = 6 eq. -5 = 9 = 0.

Figure, notice the property is  $2\pi 4p + 1$  each of a disposable ways to example the exercise probability  $2\pi p + 2 + 1$ .

$$g_{\mathcal{S}} = \chi_{\mathcal{S}}^2 \times \sum_{i=1}^{N} \sum_{j=1}^{N} x_{ij}^2$$

$$\chi_1^2 = \chi_2^2 < 2\ell$$

Rathwayness, greatest which is a real surface. It has been surfaced as the set of the control of the set of th

But agains (but on a conect

165. Sel.

The product of a generalise of except (Abb) in the description and so to of the rights

$$|X_i - 10| |X_j = \text{unknown}| |A| = 50$$

$$\lambda_{i,j} = |\mathcal{A}_{i,j}^{(j)}|$$

$$\mathbf{AU}(\mathbf{y},\hat{\mathbf{A}})=\mathbf{M}$$

156. Go.

$$A = \begin{bmatrix} 0.0 & 72 \\ 77 & 80 \end{bmatrix}$$

Figer values of A art  $s_1,\, \delta_2$ 

$$\begin{array}{ccc} \dot{\lambda}_1 + \dot{\lambda}_2 & ... & ... \\ \dot{\lambda}_1 \dot{\lambda}_2 = -200 \end{array}$$

$$\text{Given} \quad W_{2} = \frac{75}{12} \left[ \frac{75}{40} \right] = \frac{75}{2} \left[ \frac{7}{20} \frac{-90}{70} \right]$$

$$\begin{aligned} z_1(x, x, t) &= x_1 - SC_1 \left[ \frac{x_2 - x_0^2}{70} \right] \\ &= f_0(t_1 - \cot t) + 70(t_1 - 3500) \\ &= 70(t_1 - t_2) - 310t_1 \\ &= 70(t_1 - t_2) - 310t_1 \end{aligned}$$

157 (b)

 $\Gamma_{\rm BH, C} \approx 5^{\circ} H$  gorn values = getern files value

z = 2000 = 0

$$\begin{array}{lll} S(S - S(1 + SU - U) \\ = (-S) + S = -U - C + 2 \end{array}$$

15E (c)

$$(s; \, e^{is}) = \begin{bmatrix} \overline{i_2} & 0 & \overline{i_2} \\ 0 & 0 & 0 \\ -\overline{i_3} & 0 & 0 \end{bmatrix} + \frac{1}{g} - \frac{1}{2} \quad .$$

(a) for multiplier is Mighable Kind = 2

$$\begin{vmatrix}
\frac{1}{\sqrt{2}} & 2 & \frac{1}{\sqrt{2}} & 1 & 0 & -\frac{1}{\sqrt{2}} \\
0 & 1 & 0 & 0 & 1 & 0 & 0 \\
-\frac{1}{\sqrt{2}} & 0 & 0 & 0 & \frac{1}{\sqrt{2}} & 0
\end{vmatrix}$$

- (b) And find regular, temperaturing still to temperature
- . С Тин өдеп урисы

$$P[|A|] = \begin{vmatrix} \frac{1}{\sqrt{2}} & \lambda & 3 & -\frac{1}{\sqrt{2}} \\ 0 & 1/3 & 0 & -9 \\ -\frac{1}{\sqrt{2}} & 0 & \sqrt{3} & \lambda \end{vmatrix}$$

$$\begin{split} &\left(\frac{1}{\sqrt{2}} \cdot \lambda \left[ (1-\lambda) + \frac{1}{\sqrt{2}} \left[ 0 \cdot \left( -\frac{1}{\sqrt{2}} (1-\lambda) \right) \right] \right] = \alpha \\ &\left(\frac{1}{\sqrt{2}} - \lambda \left[ S(1-\lambda) \right] \left( \frac{1}{\sqrt{2}} (1-\lambda) \right) \right) = \beta \end{split}$$

$$\begin{aligned} 1 &= 2\sqrt{\frac{2}{2}} + 2^2 + 32\lambda + \frac{12}{2\lambda} = ij, \\ \lambda &= 1, \quad \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}, \end{aligned}$$

153. (6)

Observables equation  $x(K - \chi) = 0$ 

$$(1 + \lambda)(0 - \lambda)^2 - (30 - 6)$$

$$(1-80)(8^2-166+8^2)=0$$

$$x = \frac{10 - \sqrt{100 - 211}}{2} = \frac{10 - 12}{9} = 5 \pm 64$$

$$3 = 1.5 \pm 67$$

IED (nj

Goodingto, lankly regardingling

$$= \frac{1}{10000} \cdot \frac{1}{1000} = \frac{1}{1000} = \frac{1}{1000} \cdot \frac{1}{1000} = $

Oнедова 9 - 00

Continues the skilling and the per-

$$= \begin{bmatrix} 5.06 & 5.6 & 1 \\ 5.09 & -6.03 & 1 \\ 5.080 & 5.0000 \end{bmatrix}$$
$$= \begin{bmatrix} 5.080 & -5.400 \\ 6.0000 & -5.400 \end{bmatrix}$$
$$= \begin{bmatrix} 1.5 & 1 \\ 0.5 & -1 \end{bmatrix}$$

16 . (a)

The observational definition of  $|A=g_{2}\rangle \equiv g_{1}$ 

$$\begin{vmatrix} 0 & 4 & 1 & 0 \\ 0 & 0 & 4 & 1 \\ 0 & -2 & -1 - 2 \end{vmatrix} = 0$$

$$\Rightarrow (42 + 2) = 0 + 1(0 + 0) = 0$$

$$\Rightarrow (2^2 + 42 - 2) + 0$$

$$\Rightarrow 2 = 0 + (2 + 1)(2 + 3) = 0$$

$$\Rightarrow 3 = -12 + 3$$

$$\Rightarrow 1 = 72 + 3$$

162 (c)

The grown matrix is by notified and all iz eigenpations are the upd Hence all iz eigen vostors.

cre-orthogoratic ⊷of-tie eigen verson so... = 0...

holds responsing a large relieve two the green

obtain to 0. Let 
$$x_2 < 0$$
 
$$\frac{1-t_1}{t-1}$$
 
$$\frac{1-t_2}{t-1}$$
 
$$\frac{1-t_2}{t-1} = 1 - 0 - 1 = 0$$
 
$$\frac{1-t_2}{t-1} = 1 - 0 - 1 = 0$$

TES Set.

$$A = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & -1 & 0 \\ -1 & 0 & 0 & 0 & 1 \\ -1 & 0 & 0 & 0 & 1 \\ 2 & 2 & 0 & 1 & 1 \end{bmatrix}$$

$$G_2 \to G_1 \times H_2$$

$$0 \rightarrow dc + P_s$$

$$P_1 \to P_2 = P_2$$

$$\begin{split} P_2 &\mapsto P_2 \times (C(P_2 \to P_4 + P_4)) \\ & = \begin{bmatrix} 1 & 1 & 0 & 0 & 0 \\ 1 & 1 & -1 & 0 & 0 \\ 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & -1 & 1 \end{bmatrix} \end{split}$$

From hard

$$z_1 = r(14) = 1$$

#### 164. (6)

$$||A|| \Leftrightarrow |-2|$$

$$\begin{vmatrix} 1-1 & 2 & 2 & n & n \\ 5 & 1 & \lambda & 2 & 3 & 4 \\ 1 & 5 & -\lambda & 2 & 3 & -0 \\ 5 & 4 & n & 1 & \lambda & 2 \\ 2 & 2 & 2 & \lambda & n & 1-1 \end{vmatrix} = 0$$

From significant are one by much be set t

$$1.5 - 15 - 5 = 0$$
  
 $3 - 15$ 

165 (6)

$$\label{eq:alpha_sign} \begin{aligned} & \{ \{ \{ \} \mid 0 \} \mid 10 \} \\ & \{ \{ \{ \} \mid \{ \} \mid \{ \} \mid \{ \} \} \} \} \\ & \{ \{ \{ \} \mid \{ \} \mid \{ \} \mid \{ \} \} \} \} \end{aligned}$$

ā. kv ā.

$$\begin{bmatrix} 1 & 0 & 2 \\ 7 & 9 & 10 \\ 1 & 6 & 8 \end{bmatrix}$$

$$\begin{array}{cccc} n_{i,j} & n_{i,j} & \in \mathcal{D}_{i,j} + 3n_{i,j} + 3n_{i,j} + 3n_{i,j} \\ & 1 & 0 & 2 \\ & 0 & 10 & 0 \\ & 0 & 3 & 0 \end{array}$$

$$\begin{split} \tilde{a}_{\varphi} &\leftarrow P_{0} - \frac{8}{10} P_{\varphi}, \\ & - \frac{1}{10} \left[ \begin{array}{ccc} 0 & 21 \\ 0 & 40 & 0 \\ 10 & 0 & 0 \end{array} \right] \end{split}$$

Which is in Echalon form  $|g(y)| \leq |y| \cdot |g(y)| \leq |y|$ |g(y)| = 2

166. Sol.

$$y = \begin{bmatrix} 0 & -1 & -2 \\ -3 & 6 & 10 \\ 2 & 6 & 2 \end{bmatrix}$$

$$\mathbf{IP} = (N + 10) + 10 + 3$$

Bo, what 4.0

leads the 
$$a \times b$$
 for  $a = \begin{bmatrix} 1 & a - 1 \\ 0 & a \end{bmatrix}$  ,  $b \neq 0$ 

Got given 
$$C = C \otimes S$$
.

167 Sal

$$\pi_{A1} = a^{\alpha} - 4\lambda^{\alpha} , \quad \Delta \lambda = 30 = 0$$

New 2 to one of regis of this ergistic.

$$5c_1 2^{n-1} \times 2^n = \pi \times 2 + 50 = 0$$
  
=  $8 - 13 + 52 = 30 = 0$ 

So the equation 9.81 - 187 - 112 + 30 = 0. Note, we polyromats division set 9.01

$$\lambda \frac{4 + 4\lambda^2 + 7\lambda + 90}{3 + 9} = 20 + 2\lambda = -5$$

navia of  $\lambda^2 = 0$ . To = 0 such

$$\chi = \frac{9 + \sqrt{2}}{2} \cdot \frac{60}{2} + \frac{2 - 3}{2} = 9 \text{ form } 8$$

Bothologen kayesiala 2,5 a vil. S, the moximum Bosak na laigen kon o 12 bil

189. [6]

The occurrence  $f(x) = f_0$  decreases onto along the  $x^*$  at  $f_0$  given

$$\begin{bmatrix} a_1, a_2, ... a_n \end{bmatrix} \begin{bmatrix} a_1 \\ \vdots \\ a_n \end{bmatrix} = \begin{bmatrix} a_1 & a_2 \\ \vdots \\ a_n \end{bmatrix} = \begin{bmatrix} a_1 & a_2 \\ \vdots \\ a_n \end{bmatrix} = \begin{bmatrix} a_1 & a_2 \\ \vdots \\ a_n \end{bmatrix}$$

where a are countrivials air  $\Re f(x)$  , G(x) we well  $R(x) \cap G(x)$  at X = G(x) so that

$$\sum_i \bigcap_i |\mathcal{S}_i| = 0$$

Unwains the moduling vocators are not incared neependent and honors

High 
$$(4) < 0$$

20 we have infinitely more anumbra (4 e s) which will be 30, where 30 denotes a michal vector of \$1.1

109. (a)

$$\begin{aligned} & \left[ \frac{3}{35} - \frac{3}{4} \frac{2}{4} \right] \\ & \left[ (A - \lambda)^2 + \frac{9 - 3}{4} - \frac{2}{4 - 2} \right] \\ & \left[ A - \lambda (1 - 2) \right] \\ & \left[ A - \lambda (1$$

170 (9)

$$A57 = \begin{bmatrix} 1 & 5 & 7 & 8 \\ 3 & 2 & 3 & 4 \end{bmatrix} = \begin{bmatrix} 88 & 287 \\ 55 & 267 \end{bmatrix}$$

171. (a)

Given that P is inverse of  $\mathcal O$ 

$$P = Q^{+}$$
  $P = Q^{+}$   
 $P = Q^{+}$   $QP = QQ^{+}$   
 $P = QP = T$   
 $P = QP = T$ 

172. (4)

$$\alpha = \begin{bmatrix} 1 & 1 \\ 3 & 1 \end{bmatrix}$$

(Gh. Callanor, a. A. I. All = 0.

$$\left| \left| \frac{a - x}{4} - \frac{1}{4 - x} \right| = 0$$

$$5 \quad 3a \quad a \quad x^2 + 4 = 0$$
$$x^2 + 6b = 6 \quad 0$$
$$\lambda = 0.2$$

A gobrato multiplicity orang tipal 4.5 x 5 ilineal any one independent agent youth – kwis

173. (d)

$$x - x + x = 4$$
 ...(1)  
 $x - y + x = 1$  ...(2)  
 $2x + y - x = 5$  ...(2)

566 nt (1) the (2) & (2) one (2) gives

- $|z_1| + 2z = 4$  and |2z| + 2z = 5 which gives z = 1/z. = 1 and y = 2
- All Optimate, can be eliminated single, legicometratibly, at an william Colvidal satisfies Schoolschen.



# Calculus

#### 2.1 Limit

#### 2.1.1 Delinition

A number A to switch the first of binarian formal x = x of the problem concern space we have x and constraint of the constraint of th

### 2.1.2 Right and Left Hand Limits

If r = 0 and r = 0 is the r = 0 stands of r = 0 and r = 0 in Lemma 2.0 for a contrast r = 0. The sign is not in the r = 0 and a contrast r = 0.

$$\inf_{x \in \mathcal{A}(x)} f(x) := f(x + D) \inf_{x \in \mathcal{A}(x)} f(x)$$

Where  $p_i$  is the length of the filter  $p_i$  is  $p_i$  to  $p_i$  the  $p_i$  (b) and  $p_i$  is  $p_i$  to  $p_i$ 

$$\sum_{k=1}^{n-1}\frac{1}{k+1}(k) \leq \frac{1}{n}(k+1)\left(n^{2}-\frac{1}{n}\right)\left(n^{2}-\frac{1}{n}\right)$$

In this case, we have,  $|-r(a-b)| = \frac{1}{r^2} \cdot \delta(a-b)$ 

$$\frac{1}{r} \frac{\Omega_{r}}{\sigma} \left( \frac{\partial r}{\partial r} \right) = \frac{1}{r} \frac{\Gamma_{r}}{\sigma} \left( r \right)$$

(her)  $\frac{1}{1+x^2}f(y) = \lim_{x \to 0} f(y) = \frac{1}{x^2}f(y)$ 

If the altinomial control and continuous or r is the continuous between r of i(r) and r is the r and r which is the r and r is the r

#### 2.1.3 Várious Formulae

Trese forms we are sometimes deals to rile taking it rits.

$$(1) = e(2) = (2 + e)x + \frac{2(2x - 1)}{2x}x^2 + \frac{2(2x - 1)x - 2x}{2x}x^{2x} + \frac{2}{2}$$

$$\begin{aligned} & (1-x)^2 = -x^2 + x^2 + x^2 = \\ & -x^2 = -x^2 + x^2 + x^2 + \frac{x^2}{2!} (\log x)^2 + \frac{x^2}{3!} (\log x)^2 + \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{4!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{4!} + \dots \\ & -x^2 = -x + \frac{x^2}{2!} + \frac{x^2}{4!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{4!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{4!} + \frac{x^2}{4!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{2!} + \frac{x^2}{4!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{2!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{5!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{5!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{5!} + \dots \\ & -x^2 = -x + \frac{x^2}{3!} + \frac{x^2}{5!} + \dots \end{aligned}$$

Numerober: Leg 1 =  $J_1 \otimes_{\mathbb{Z}} g = J_1 \otimes_{\mathbb{Z}} w = A_1 \otimes_{\mathbb{Z}} G = J_2$ 

#### 2.1.4 Same Usoful Results

$$1 - \frac{1}{1 + \frac{1}{1 + \frac{1}{2}}} \frac{2700}{1 + \frac{1}{1 + \frac{1}{2}}} 2700 = 1 \qquad 3. \quad \frac{1}{1 + \frac{1}{2}} \frac{2700}{1 + \frac{1}{2}} = 2. \quad \frac{1}{1 + \frac{1}{2}} \frac{1}{1 + \frac{1}{2}} = 2.$$

$$S = \tfrac{C}{2 + \epsilon} \operatorname{const.} + 1$$

$$5 = \frac{2\pi}{\pi} \omega_i (1 + \cos \theta_i) = e^{-\theta_i}$$

$$S = \frac{2\pi}{2} \mathcal{I}_{p}(t) + \mathcal{I}_{p}(t) = e^{-t} = \left( 0, \frac{1}{2}, \frac{1}{2} \right)^{2} + e^{-t} = \mathcal{I}_{p} = \frac{2\pi}{2} \left( 1 + \frac{2\pi}{2} \right)^{2} + 2\pi$$

#### 2.1.5 Indatarminaçe Forme

A fixedianty, uson uncontact and contaminate from the c -them as c 
ightharpoonup is a relative ting eigenvalue. 0.00 with 0.08 0.00 . They are defined values current independent and natural  $x \in \omega_0 \omega_0 = \omega$ , 0.8  $\omega_0 = 0.25$   $\omega_0^2$ we use the Chese rain (ind).

2.15.1 In determinate Formet 
$$\frac{\partial U}{\partial U} \otimes \Gamma \stackrel{\text{ex}}{\Longrightarrow}$$

Use Litespila is Fulfi-

**Lift-displical Review (**)  $\mathbb{C}[x]$  since y(x) the two functions on a classification.

$$\lim_{n\to\infty} \partial_n \phi_n^* = (1-900) - \lim_{n\to\infty} \phi(x) = 0$$

or n

$$\inf_{x \to 0} f(x) = \infty \quad \text{and} \quad \lim_{x \to 0} f(x) = \infty,$$

F-1

$$\lim_{x \to a} \frac{\hat{\eta}(x)}{\hat{\eta}(x)} = \lim_{x \to a} \frac{\hat{f}(x)}{\hat{\eta}(x)}$$

passible to all a thickets into the inte-

**Working Rule** (If the Initial fly) ( $\sqrt{r}$ ) ( $\sqrt{r}$ ) ( $\sqrt{r}$ ) ( $\sqrt{r}$ ) with a local sum  $\sqrt{r}$ ) differs time. It expends the respect to  $\sqrt{r}$  and  $\sqrt{r}$  is a new Liberton number of New  $\sqrt{r}$  with a local sum and  $\sqrt{r}$  and  $\sqrt{r$ 

**Constant** Poisson applying D (section) is in the energy started and the form A (A). The consisting PDS A is in the Bond to B and B A.

#### 3.1.5.2 Indeterminate Form-H (0 k ~ I

The form per translation for the form DO of  $\omega$  ,  $e^{i(a)}$  , we find that L1 090 by  $e^{i(b)}$  . By 66 and d

$$\inf_{x\in \mathbb{R}} \| \frac{n}{n} f(x) - f(x) - 1 \|_{L^{\infty}(\mathbb{R}^{n})} \| \frac{1}{n} \|_{L^{\infty}(\mathbb{R}^{n})} + n.$$

Inchised out on te

$$\lim_{t\to\infty} f(x) \cdot \Phi(x) = \lim_{t\to\infty} \frac{f(x)}{1/(\pi(x))} \left(1 \cos C(t) \cdot 2 \cdot \frac{1}{\pi(x)} \right) \frac{\Phi(x)}{1/(\pi(x))} \left(1 + 1 \cos^2 x\right)$$

 $\log \operatorname{Lin}_{\mathbb{R}}(\eta y)$  , (y) = 1 and to the form  $0 \subseteq \operatorname{orded}(y)$  is the mass constrained by  $1^n + \log \operatorname{int}(y)$ .

# 2.n.5.3 Independente Form-III (0° or 1" or • °)

Outpower lift if V(x)[f(x)] -that are post of those problem is

l'ar

$$\ker y = \lim_{t \to a} |r(t)|^{\alpha}(t)$$

Ізилдірдість Бойльіре віже де

$$\lim_{x \to 0} |x| = \lim_{x \to 0} |\mathbf{e}(x)| \cdot |\mathbf{v}_{X}|^{2}(x)$$

to winder yet a remove code egg pulses (letter 0.2 with this straiger by Lincom 0.0 ct who the interpolation of the production of the

# 2.2 Continuity

# 2.2.1 Definition

eminaran (), ) is belin ediler vill ein ein ib ib behant nubus er die vill

- , thanks, the lettle of Cylistian which both the number and
- $z_{\rm c}$  . The particular lightly confidence one are and is equal to the value of fact  $z_{\rm c}$  (z=9

Ξſι

Note:  $\hat{Q}$  is see paring the definitions of instance or analysis affective value  $z = a Q \hat{Q}$  is great access as z = a Q

 $f(x,\theta^*) \approx (\text{variables } d(x+\theta)) \text{ walless } d(x+\theta) = g(x+\theta) + f(x) + f(x) \text{ where } x \in \mathbb{R} \text{ is the particles of } x \in \mathbb{R}^n$ Y = 32

# 2.2.2 Confiduity from Left and Continuity from Right

Edition and note Himeligh encoded interest Zode (also Harry go, it has We say than 5 septim rows in in the letter  $a\in \mathbb{N}$  in the A(t) explained to equal to A(t) for party t a section be continuous in the right of  $a_t$  t

 $[\Pi]^{(k)}$  for every and  $\mathbf{x} = \mathbf{p}$  also trep

r A lung connection in the r  $g_{r,r}=g_{r}r$  by continuous for the leavest object and uses from Again,

#### 2.2.3 Continuity in an Open Interval

A function  $\ell$  also the last introduction potantization  $(\ell,S).$  This graph page  $\ell$  , each combat potantization

#### 2.2.4 Continuity in a Closed Interval

Let a color methy  $\{ H in 
et I$  on the closed frame  $\{ k \mid i \in \mathcal{K} \text{ solid to the continuous control closes the events of the <math>\mathcal{K} \}$ le Uli tie:

- for the discussivement agreements
- $^{6}$  ,  $^{6}$  30 in this flow the left all plane.
- 2. COPPT in confee apon inervaling of

# 2.3 Differentiability

Derivative at a path of each decision appears throw  $\{s_i,b_i\}$  in B and  $[c_i,b_i] \in I$  then a figure a $M \mapsto R$  is so displayed that an islay  $g_{M \cap R}(1)$ 

$$\left\| \frac{1}{2} \frac{|\gamma|^{\frac{1}{2}}}{|\gamma|^{\frac{1}{2}}} \frac{|\gamma|^{\frac{1}{2}}}{|\gamma|^{\frac{1}{2}}} \left\| 1 + \frac{|\gamma|^{\frac{1}{2}}}{|\gamma|^{\frac{1}{2}}} \frac{|\gamma|^{\frac{1}{2}}}{|\gamma|^{\frac{1}{2}}} \frac{|\gamma|^{\frac{1}{2}}}{|\gamma|^{\frac{1}{2}}} \frac{|\gamma|^{\frac{1}{2}}}{|\gamma|^{\frac{1}{2}}} \right\|_{L^{\infty}(\mathbb{R}^{2})}$$

exict (finitely) with k generally  $p_{k}(t)$ .

# 2.3.1 Progressive and Regressive Derivatives.

It discreptions which has been contributed with world  $\hat{\eta}(x):=\eta_{\hat{\theta}}(x)\eta_{\hat{\theta}}(x)\eta_{\hat{\theta}}$ 

$$\lim_{n\to\infty}\frac{f(u_2-g)}{g}=\frac{2\pi n}{g} = 2\pi n + $

If a water-size detective of the local derivative of f(a) = 1 , a great so

$$\lim_{t\to\infty}\frac{1}{t}\frac{dx_1-dt_2-(x_0)}{t} = t + c(x_0), \quad t \mapsto 0 \text{ as } 0 \text{ so denoted by } f(x_0) + t \text{ and } y \in f(x_0) + t \text{ and } y \in f(x_0).$$

# 2.3.2 Differentiability in an Open Interval

A randian 15 sector-be differentiable in an eigenvalue value  $(\mathbf{a}, \Omega_{i})$  . The differentiable stresses desirable  $\mathbf{a}$ aj eningasy.

#### 2.3.3 Differentiability in a Closed Interval

A property  $\|\mathbf{g}(d)\|$  . We seem that of the following beautiful to 0 by

- three (x viz.) are formally in the commutation of
- $\mathbf{g}_{i,j}$  ,  $\mathbf{g}_{i,j}$  graphs in the matrix  $\mathbf{f}_{i,j}$  and  $\mathbf{g}_{i,j}$  and
- 👃 Juleie Gebrumpte oben mervede 👈

# 2.3.4 Relationship between Differentiability and Continuity

**Theorem:** If  $\theta$  is the first of different abbreviary constrained as the necessary  $\theta$  and  $\theta$  and the first of  $\theta$  is the property of  $\theta$  and  $\theta$  are denoted by a Lagrangian  $\theta$  of  $\theta$  and  $\theta$ .

Mate: The class of at this facular to the

 $\in C_{2}$  throughs a hereessare out not also islem conductable fundaments a limited let is five satisfied by:

 $i \rightarrow i$  if we will be the  $\rightarrow$  dominally.

Bur accomply Lagraniers, ties if y

### 2.4 Mean Value Theorems

#### 2.4.1 Rolle's Theorem

mailten mar #jubit such ins.

- $1 \log s$  compacts ( ), we keep this value and then
- N=P(N) as seen for expression  $p_{N}$  is the light of interval A in X is small
- $2. \quad \beta(g) = \delta(g).$

the little significant cast one value of  $\epsilon_{\rm c}$  asymmetric unit of  $\delta$  as of that the  $\epsilon$ 

name: For all Incorem will profit oil great.

- $1 \leq n \log_{10} t$  is specifying as at some panel in the measure  $t \approx 0.00$
- $\delta = i / \epsilon'(\epsilon)$  and not exist also requests in the interval  $\delta < \epsilon < \frac{1}{2} \epsilon \delta$
- 2. 67415 676

### 24,2 Geometrical Interpretation

Let  $A_i$  then be the source y =  $B_i$  is consequent to be detected in the set  $A_i$   $B_i$  induces by

graph f(y) is a finite of that f, the curve y = 0yd folio (angular section) if f of even f and f if f is f of f and f is f in f and f is f in f and f in f i



Then Keller theorem assets are the Aliver's actions buyling a stepper warry free or field to large that which is parallel to all as  $x \in \mathbb{R}$  are explained as the armonic field of x and x because of the explain of the armonic field of x and x because of x and x are the explained of the armonic field of x and x are the explained of the armonic field of x and x are the explained of x and x are the expl

Their interior x , the than one point an  $x\mapsto x$  and x the langents at x in the parallel x was in  $\{y_x$ shown in Figure (b) (or there exists here then but the high being  $\mathbf{r}(\mathbf{s}',\mathbf{r})$  such that  $r(\mathbf{s}'=0)$  skets from the Stall at Proesis embed of oathors we multiplied in (a, b) which fall  $C(\beta \neq 0)$ 

#### Remarks:

- But Has the cross to be developed as a function of a substance by the developed as a function of the substance o
- $\omega$  . The terrorise HB disc incorest, a new  $\omega$  will be. System via zero a larger timing brighton satisfying of archiver small group is about a some

#### Complet.

Youry Holioid have entire the ratio ≥ing time in eg.

$$(c)\cdot c(x)=c^2+r+A(x)\}\subset_{\mathbb{R}} 2_x$$

$$\langle \varphi \rangle \cdot f(z) = \langle \gamma \cdot \gamma \rangle (\langle \gamma - z, \widetilde{\gamma} \rangle_{\Gamma(1)}) \cdot S.$$

$$(c) \cdot (ax) = (a^2 + 1) \cdot (c + 2) \cdot (c_1) \cdot (c_2)$$

#### Safetton:

.. ji:

- at the first kind of the contradiction, this is a figure of  $g = g \approx$
- $(\hat{u},\hat{u})$  (in the limit  $\hat{u}$  ) are given in the first tenth of each  $\hat{u}_{i}$  (i.e.,  $\hat{u}_{i}$
- $(k(1,\ell), \phi) = (-3)^{n} + (1-k) + (0, \ell)(0) + 2^{k} + 2^{k} + (1-k) + (1-k) + (2^{k} + 2^{k}) + (2^{k$

Thus, it this three good conditions of fat d(s) we see that satisfied the d(s) will be existed a paction of s . PM:100 for (45.19) such that P(x) = 2x = 4.

Differentiating (later the gas, P(y) = 2x + 2

$$\log_{10}(c) = 0 \Rightarrow 2a + 1 = 9 = c + \frac{1}{2}$$

For there exists 
$$-\frac{1}{5}$$
 is  $(-5, 2)$  such that  $-\left(-\frac{1}{5}\right) = 3$ 

Halker Policythopromisiveriteg,

$$f(M, Divers f(p) = (p + 1) p = 2p n$$

... ][

- (i) Choose that are so keeping turbaten it is considered as  $\mathbb{N}_{p}(2)$ .
- (ii) the bologizing by constitution on its derivative  $(v_{ij})_{i \in I_i}$

$$\hat{\theta}(0,t): (1-(1-t))(1-t)(1-t) = 0 \quad f(0) = (2-t)(1-t)(1-t) = 0 \Rightarrow f(1,t) = f(0)$$

has all the three conditions of  $\mathbb{P}(4.2)$  beyond are satisfied. The whole three dysolal alternation as  $CLOCC(\Theta)$  of  $CC(\Omega)$  but an area  $CC(\Omega) = 0$ .

 $\mathsf{CHF}_{\mathsf{e}}(\mathsf{a},\mathsf{b}(\mathsf{a},\mathsf{b})) = \mathsf{th}(\mathsf{a},\mathsf{th}_{\mathsf{e}}(\mathsf{p}))$ 

$$\begin{aligned} f'(x) &= (x - 1) \cdot 2(x - 2) \cdot 1 + (x - 2)^{\alpha} \\ &= 2x \cdot 2(x/2x + 2 + x + 2) \\ &= 2x \cdot 2((3x - 1)) \end{aligned}$$

المرزا

$$f(x) = 0$$

$$\Rightarrow$$
  $(z-5)$ 

$$(10-3)/(40-4) = 0$$

$$z = 2.40$$

 $\Phi \cap \mathcal{C} = \{1,2\}$  distribution,  $\mathcal{C} = \{3,3\}$ 

$$XA_{i} = \Theta + \Theta \times 0.00449(6.5) = 25 \cdot \Theta \times 0.00119(1.0)49(6.5)$$

Han el Tulle sitted a misser liegs

$$(\hat{y}) \cdot Q \approx -(\hat{y}) \cdot (\hat{y}^2 - 1) \cdot (\hat{y} - 2)$$

:1:

- (ii) Fig. 4 ((4) is a polynomial function, it is constructed in  $j \in I(S)$ .
- (ii) f(s) heing a polynomial rand on is derived our f(1,2).

$$(3) \ \ (1-2) = (1-1)(1-2) = 0, \ ((2) = (4-1)(2-2) = 0 \Rightarrow (3-1) = (22)$$

Threight the three couplings of Antaron artispessors, thorsions, inerequisite even the Antaron artispessors, thorsions, inerequisite even the Antaron artispessors in the contract of the Antaron artispessors and the Antaron artispessors are also as a second and a second artispessors are also as a second artispessor are also as a

Differentiating  $\ell$  ) with  $\epsilon_i$  we get

$$f(y) = (y^1 - 1) \cdot 1 + (y - 2) \cdot 2y - 3x^2 \cdot 4x .$$

$$f(y) = (1 - 3x) - 4x - 1 = 0.$$

$$\Rightarrow \qquad \qquad s = \frac{4 - \sqrt{16(-4.4)/4}}{2.2} - \frac{2 - \sqrt{2}}{2}$$

Assorber 
$$\frac{2+\sqrt{2}}{3}$$
  $\times$   $\frac{2+\sqrt{2}}{3}$   $\times$   $2  $\Rightarrow$   $\frac{2+\sqrt{2}}{3}$  and  $\frac{2+\sqrt{2}}{3}$  (a). Let  $(-1,2)$$ 

So there exist worker for these  $\frac{2+\sqrt{7}}{8} \times 0^{-2} \frac{2+\sqrt{7}}{3}$  in ( ). In Station that

$$e^{\left(\frac{2-dr^2}{3}\right)} = 0 \sec r \left(\frac{2+\sqrt{r}}{3}\right) - 5$$

Horse, PoteStheoren, kirerti⇔t

#### Example 2.

come explosor provide the latering functions and the typic (i.e., places) where the **dott-ar**ve sanicles,

$$I(\mathbf{r}) = 2 \cdot 1 + 2 \cdot 2 \cdot 1 \cdot 1 \cdot \left[ \mathbf{Y}_{i} \frac{\mathbf{r}}{2} \right]$$

Solution:

Green. 
$$f(x) = \sin x \cos x$$
 ...  $0$ 

(a) 
$$|f(z)|$$
 is continuous in  $\left[2, \frac{\pi}{n}\right]$ 

(a) Taylor define the in 
$$\left\lfloor \frac{1}{2} \right\rfloor$$
 and

(a) 
$$900 - 5 = 3 + 665 = 3 + 1 = 1$$

$$\left\{ \left(\frac{\pi}{2}\right) = g\left(-\frac{\pi}{2}\right) + g\left(g\left(\frac{\pi}{2}\right) = 1 + 0\right) + 1 + \left(\left(\frac{\pi}{2}\right) + i\left(\frac{\pi}{2}\right)\right).$$

Table, with the miles conditions of Robert Bostom are scholard, Braneiu Hill, Hell exists at cost one real

number of 
$$\mathbf{r} = \mathbf{0}$$
 , such that  $\hat{\rho}(\hat{\boldsymbol{\beta}}) = 0$ .

ให้ใช้เขาแล้ว (gr() wind yr weige

$$f(\hat{r}) = \cos x \cdot \sin x$$

Now  $V(c) = 0 \implies \cos s \cdot \sin s = 0 \implies c$ 

$$\phi = \frac{n}{2} \frac{\operatorname{to} \operatorname{det}}{\operatorname{det}} \frac{\operatorname{det}}{\operatorname{det}}, \quad \text{if } n = \left( 2 \frac{\operatorname{d}}{2} \right) \Rightarrow n = \frac{\operatorname{d}}{2}.$$

So them arises 
$$\left(-i\left(\sqrt{ik\frac{\pi}{2}}\right)\log m + 24\pi i\left(\frac{\pi}{2}\right)\right) = 0$$

once Ballio recremis പെടുപ്പുന്നു പ്ര<sup>ട്ട</sup>

#### Example 3.

ξŪ

 $350.86 \pm 8$  of each 2.9 Hole concernment for Lincoln  $[(z_1, y_2), (z_1, y_2)]$ 

#### Sofution:

0.4  $\begin{array}{ll} p(r_1 = -1) = (23 - 2) \\ \tilde{\rho}(r) = -1 + (-1) / 2 / 2 \end{array}$ Ü Jip argeniali.

Subtraction for the

g(i, h(x)) is continue to  $S_{i}(42, 2)$ 

 $(|\delta|)^{\rm T}$  (Report points ( ) with  $\epsilon$  we get

$$f(0) = \frac{1}{\lambda} \ln \lambda 0$$

 $\rightarrow$  the derivation of  $\hat{q}_{i}$  to serior  $\{q_{i}\}_{i=1}^{n}$ 

m (注: i+ no. dei x込ます; 2 //)

thus, and condition (if all Figlie's theorem is not satisfied, though in Back's the ment is not applicable to the function  $\ell(\phi) = e_{\Gamma}[\alpha_{\Gamma}(\omega), \chi]$ 

Moreover,  $2(1+\beta) = 2(1+\beta)$  and  $6(2) = (2+\beta) = 6(2)$ , so the condition (1) of Ersh Nithern  $g \in \mathbb{R}$ 

Further initial each multiplicate that it is a constraint of the core  $y \in [a,b](0,2)$  which the magnitude yla positiel in poyage

#### 2.4.3 Lagrange's Mean Value Theorem.

na albana na Ashiki

- Lind Commission In decembra a spling of a grand
- $^{3}$  . Differentiable in open increasing  $\phi$  (i.e.,  $\phi$   $\phi$  ,  $\phi$   $\phi$ 
  - ightarrow the exception catholic form a yield in the open matrix  $z_{i}$  at  $z_{i}$  absorbing t

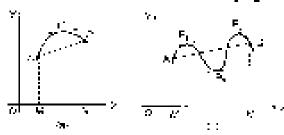
$$\hat{C}(x) = \frac{-i(xy - 2ixy)}{x^2 - y}$$

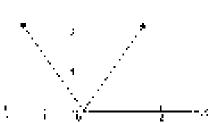
### 2.4.4 Geometrical Interpretation

Let A(B) be a: 1 and the curve  $y \in C_{A}$  corresponding to the Hell condense and respectively.

Site  $\theta(t)$  is continuous to (a,b), the govern (b) is a respect to continuous from Alack Eq. ( ),  $a \in \mathbb{N}_{t} \setminus S$ the ivalidation for our  $p \in \mathbb{R}^n$  has a tangent at each count between A and A , A as A

a =  $c_0$  for stone of the p or d . Although and the class in the contribute a  $d = \frac{P(b+b)d}{b-b}$ 





at additionable realition if each in (in which such that  $P(c)=\frac{Q(b)-Q(b)}{b-c}$ 

#### Remarks

- The usuargues in each valuant basis on talks for the turb, on which they contactly over  $\omega\in \mathcal{L}$  ,  $\omega$  two spectrums
- 6. The converse of lagrangian mann visited representative but the link (may be excluded as  $\frac{\partial (t) \partial t}{\partial t}$  at  $\frac{\partial (t) \partial t}{\partial t}$

#### Ежиную 1.

. Worky Lagrang-Bursachweit of mooretmorting by towing Contributed States of Son (more grand in the Califolia) Bursach

$$(s^{-1}, f(S) + g^{-1} + 2g + 3, g + 4, g)$$

$$\dim \, \tau(s) = \pi x^2 + \delta x + \delta, \, 0 \times 0 \text{ i.e.} (s, 0)$$

#### Solution:

- (a)  $\psi_1 \psi_{\overline{Y}} = \psi_1 \psi_1$  ,  $\psi_2 + \psi_3 + S$ 
  - ii) f(s) saggin promomal function is curling to (1,6)

... ;1;

51

(i) ((a) being a common let familier lie de ivor leth (4, 8).

ands, open the polytical world soprogen more value theorem whose lefter the core. The books along the period from the control from

$$\begin{split} \sigma(\phi) &= \frac{f(\theta) - f(\theta)}{|\theta| - 2} \\ - f(\theta) &= \theta^2 - 2(\theta - 3 - 5) \text{ , } n(\theta) + 4^2 + 2.7 \text{ } 1 \otimes - 27 \end{split}$$

 $\mathbb{E}[\mathbf{H}(\mathbf{p}, \mathbf{q}), \mathbf{q}, \mathbf{q}, \mathbf{q}] \in \mathbb{N}$  with  $\mathbf{z} \in \mathbb{N}^{2}$   $\mathbb{N}^{2}$ 

$$f'(z) = 2x + 2 \Rightarrow f'(z) = 2z + 3$$

$$f'(z) = \frac{963 - 5(4)}{6 \cdot 2} = 3x + 2 - \frac{51 \cdot 27}{2} = 8x + 2 - 12$$

$$\pm$$
 27 - 10 ac = 3

Fig. there exists  $p=p(\eta_1,\lambda,\beta)$  as  $n\cdot \nabla^{\frac{1}{2}}f(\beta)=\frac{n_1p(-\beta)d}{\beta-\beta}$ 

ழுந்து நிருகாருக்காள் வெள்ளாக beat lied and நடிதி

- 20) (Com 104 | 106 + 14 | 14 p + 2
  - (ii) the not a polynomial function is solution to (0,M)
  - Gridaang a poknomal ungter leide werk into 🙉

Thus i seen the conditions of Lagranger means on the Incoron are satisfied. The every there exists

a mestione for interpolating (8.7) and that  $f(s)=\frac{\eta(s)-\tilde{\eta}(s)}{1-s}$  .

$$f(x) = (xx^2 + x^2x + x^2x) + \varphi x^2 + \varphi x + x$$

Differentiating (1) will be well (6)

$$f(s) = 2c_0 \quad c \Rightarrow f(c) = 2c_0 + 6$$

$$\label{eq:continuous} \mathcal{L} = -\frac{\partial \mathcal{L}(x)}{\partial x} - \frac{\partial \mathcal{L}(x)}{\partial x} - \frac{\partial \mathcal{L}(x)}{\partial x}$$

The entries coast  $z=\frac{z-a}{2}$  is the  $J(t,ggr_t, \log t, ggr_t)=\frac{t(d_t-d_t d_t)}{c-d_t}$ 

For  $t = \log n$  gas in control to the noise verifier, and  $c = \frac{a - b}{2}$ 

#### Comple2

The approximation  $(x_i, y_i) = x^i$  where the langer  $(x_i, y_i) = x_i$  and  $(x_i, y_i) = x_i$ 

#### Solution:

$$|0v\rangle = |x^2|$$
 in the interval  $|-3|$ .

- $\delta U_{i}(z)$  weing a polynomial factor in Eq. ( ) in  $\xi$
- (2) %:) \$40 g a point circal is convenient (1), \$).

. Full collett as a notions of Exprenge's more value is expensive solution two heliums on fiving ( ) 2 , 1 ending, then as a  $\alpha$  energy encountry solution of (1,S) and (1,R).

$$r(x) = \frac{f(2) - f(3)}{2 - 1}$$

$$f(3) = \sqrt{x} = 27 \text{ and } f(3) = 1 - 1.$$

Differentialings from the sample.

$$F(r) = 3r^2 = F(s) = 5r^3$$

$$F(r) = \frac{7(s + 0)}{5 - r} = 3r^2 - \frac{27}{8} = 50r^2 = 10$$

$$F(r) = \frac{13 - 34}{3 - 3}$$

$$r = -\frac{39}{3}$$

$$0.4 \quad 0.4 \quad (1.3) \Rightarrow c = \frac{\sqrt{M}}{3}$$

Max 
$$\epsilon = \frac{\sqrt{39}}{3}$$
, from (1)  $\phi = \frac{\sqrt{30}}{3}$ 

Hence the solution point  $\left[\frac{\sqrt{28}}{2},\frac{13\sqrt{28}}{8}\right]$  or the given a transfer of where we get a spant also the

600 aprilling the periform ( a v1/3/90)

#### Frample 3.

Does the Lagrange's mass reduce decree apply to  $f(x) = \chi(x) + (2\chi(x))$  . What conditions for two  $f(x) = \chi(x)$ 

Salution:

$$|g_{\rm BM}| = |g_{\rm BM}| + |g_{\rm BM}| + |g_{\rm BM}| + |g_{\rm BMM}|$$
 (2)

- (4) Prince of a custoff for
- shall Differentiating Classical Law dec.

$$r(x) = \frac{1}{2}e^{-\frac{r(x)}{2}} = \frac{1}{2\pi^{1/2}}\lambda = 0$$
 (1)

 $\Rightarrow$  They be remise in the Sober notice of the = 0

is traine natide (vae simili). Tu

In is, the condition y(t) of Learnings are entremental and in not soluted by  $t \in [0,1]$  or  $S(t) = t^{-1}$ . If t = 2nd comparisons also have a manifestable to the great function  $S(t) = t^{-1}$  of  $S(t) = t^{-1}$  and  $S(t) = t^{-1}$  of  $S(t) = t^{-1}$  of

Conduction. If the event from 
$$(Z_i,\, \partial_i^i(x) = \frac{1}{\alpha_i, 2\pi_i}, \alpha_i \neq 0$$

Also that if  $(-1)^{1/2} \sim -1$  in the  $1/\sqrt{2} = 1$  give have been ally realized eight

$$f(\hat{y},\hat{y}) = \frac{f(\hat{y} - \hat{y}, -\hat{y})}{1 - f(\hat{y} - \hat{y})}$$

$$= \frac{1}{44\pi^{2}} = \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{2}{2} = 1$$

$$z^{(k)} = \left[ \frac{1}{27} + z^2 - \frac{1}{27} + z^2 \right] - \frac{1}{2\sqrt{3}}$$

$$4s_1 + c_2 = \frac{1}{4\sqrt{s}} \circ \frac{1}{4\sqrt{s}} \circ 1 \to c = -\frac{1}{\sqrt{3}} \text{ soft is } m(-1,1)$$

Thus, we find , so the elevant waters for  $\pm \frac{1}{\sqrt{2}} \approx 1.178 \times 1.078 \times 1.078 \times 1.014 = \frac{6(1-6)-1}{1-1-7}$ .

the laws that the converse of Lagrange's meaning lust harron way not be true

# 2.4.5 Some applications of Lagrange's Mean Value theorem

- i, fylgalia (viz
  - (a) continuous n'is e)
  - (a) derbhaid in (a, 5) and
  - $(\hat{g}_1,\hat{g}_2)$  is  $\hat{g}_2$  in the matrix of them for sections in presenting  $\hat{g}_2$  to the  $\hat{g}_1$   $\hat{g}_2$   $\hat{g}_3$

**Proof.** Let  $v_1 v_2$  be a rollow notation of a proportion of  $x_1 v_2 \in \mathbb{R}^n$  where  $x_2 \in \mathbb{R}^n$  is the roll of the proof of the proof of  $x_1 v_2 \in \mathbb{R}^n$  and  $x_2 \in \mathbb{R}^n$  is the roll of the proof of th

$$f(G) = \frac{f(a_2 + b, a_1)}{a_2 - a_1}$$

$$\Longrightarrow -(\tau_2 - \tau_1) \cdot \hat{\Gamma}(\tau_2) = \hat{I}(\tau_2) + \Pi(\tau_1)$$

 $\operatorname{Sul} f(\overline{r}) \times \operatorname{Arm}_{r} f(x) \operatorname{in} (x, t) \to f(x) \times \operatorname{O}(x, t) \operatorname{In}(x_1, r_2), \operatorname{Arm}_{r_1} \operatorname{dist}(x_1, r_2) \operatorname{Arm}_{r_1} \operatorname{dist}(x_1, r_2)$ 

$$|\Phi|=\{a,\ldots,a\}: \{a\}: b\in C$$

$$\Rightarrow \quad \exists (a_s) \quad e_{2s} \ (>0)$$

— for its fix from that 
$$a_{n+1}$$
 becomes as  $a \in \mathbb{R}^{n+1}$ 

Hereas they are lettle increasing to ballo

- 2. Primara an Wat ig
  - (-) լույրաբագրի (այթի
  - (b) consubiting  $a_{ij}(a_{ij})$
  - D) for all this is the expression of the expres

# 2.4.6 Some Important Doductions from Mean Value Theorems

- . Here the the respect that  $\mathcal{U}_{i}$  is sent to eight the place of the  $\mathcal{U}_{i}$  that is a constant to eight of the risks
- 2. If  $n \in \operatorname{hold}_{\mathbb{R}^n}(A)$  is the functions of the  $H(s) = \phi(s)$  in suppose the interval (a, b), from  $H_s$ , and  $H_s$  is the following suppose  $(a, b) \in \mathbb{R}^n$ .
- III "[a] 6.
  - cat sonlin ruku posecintorva ja bij
  - (c) after disheroupen glassification
  - (a) Fix 0 experience of department for each energy function in the discontinuous (a, b) and \$75(100) is few individual of the result of the closed answers, a, b).

# 2.4.7 Some Standard Results on Continuity and Differentiability of Commonly used Functions

IIIs those the diviendment that being 1+ as regarding common to write a tracking regularization of  $C_{i}$  and  $C_{i}$  are regarded as  $C_{i}$  and  $C_{i}$  are regarded as  $C_{i}$ .

- $x \in \mathbb{S}$  ) and thin significations of the energy sets  $[f](\hat{\eta} = 0), \forall \hat{\eta}[.]$
- The expose us function (a), at a d, sink as well as assume a so demand a entitlifierent stiller.
   Solition length
- $\Theta = C_0^{-1} \cap \operatorname{dist}$  , a generator of the 1 v=3+ regardined of contract are differentiable with  $\Gamma$   $\operatorname{eid}$  denoted by
- 3 Provide actions at a + 14,20 Page.
- $\hat{a} = e^{it} \otimes (a^{2}) \otimes a^{2}$  up us but not different notions of  $a_{t} = 0$
- $I = I(P) \rightarrow \cdots \times AXX = I(P)$  for instance the x-adjusted particle  $T_1 = Y$ .
- S = S of all therefore products but the relativistic goal to a continuous transition of the following stage of the constant different sale.

# 2.5 Computing the Derivative

### Rules of Differentiation:

$$\begin{aligned} \Omega' - \underline{Q} \Gamma &= \Gamma \times P \\ \Omega' + \underline{Q} \Gamma &= \Gamma \times Q \\ \Omega' \underline{Q} \Gamma &= R \Gamma \times Q \end{aligned} \qquad \text{(all energy a.c.)}$$
 
$$\Omega' \underline{Q} \Gamma &= R \Gamma \times Q \qquad \text{(all energy a.c.)}$$

$$\frac{1}{\sqrt{2}}\int_{-\infty}^{\infty} \frac{dt'' - tx}{2t'} \qquad (S.c.v.mnu.c)$$

$$\frac{d}{dx} W(\nabla x) u = \frac{\partial^2 - \partial y}{\partial y - \partial y}$$
 (Channe)

Jangans active like likes, we can differ rither meath title. Sizes where yie at explicit uneffor site.

 $T \leftarrow L(t, r, r, r)$  is the stable of some  $r \sim r \cos t t$  continuing a section of  $t \in \mathbb{R}$ 

We applied a discount of the embeddy sangles we have long + the recovered discount of the inference - Fig. (44+0) up to the same have + we have the more interpretable and the order consists + to

- Daverenistra legischetz (in);
- Improbligation
- ا Legerit mit «Illerenfisten
- Beyoner old Herenge, vis.

# 2.5.1 Differentiation by Substitution

Therefore regions a village in lay matter display belong the first of the expension of the first of the second belong the second the expension of the expension

 $\| \|_{L^{\infty}} \in \mathbb{R}^{n} \times \mathbb{R}^{n}$  is a smallest the accordance of the figure

$$|\mathbf{j} - \mathbf{j}| = 2^{n}$$
,  $g_{n}(\mathbf{x} - \mathbf{x}, \mathbf{s})$  for  $s = 0.005$  (

$$2 + q^2 + \chi^2$$
 pct.,  $= q (\mathbf{B} \cdot (0) \times 1 \times (2)^{-1}$ 

$$y = e^2 - e^2$$
 put  $e = a \circ e^2 + o \circ e = a \circ e \circ e = 0$ 

$$q_{ij} = \int_{1,0,1,1}^{\frac{N_{ij}-1}{2}} |\cos q(\frac{1}{2-\alpha})|_{ij} dx dx = 0.0093$$

$$\omega = g \log_2 g + 0$$
 with  $\epsilon$  in the Historian stands of the  $0.00 \times 0.00$ 

#### Example:

. If there is a mask it with principles are supply to the substitution  $\mathcal{L}(\mathcal{L})$ 

$$\begin{aligned} & \left( 2 \left( |\mathbf{y}| \right)^{2} \left( \frac{2x}{1+x^{2}} \right) \right) & \left( 2 \left( |\mathbf{y}| \right)^{2} \left| \frac{\sqrt{1+x^{2}}}{x} \right| \right) \\ & \left( 2 \left( |\mathbf{y}| \right)^{2} \left| \frac{\sqrt{1+x^{2}}}{x} \right| + x \right) \end{aligned}$$

$$& \left( 2 \left( |\mathbf{y}| \right)^{2} \left| \frac{\sqrt{1+x^{2}}}{x} \right| + x \right)$$

#### Schution:

$$\varphi = \sin\left(\frac{\pi^2 \lambda_2}{(1-x^2)}\right) (x, x - x) \in \mathbb{R} \times \mathbb{R} = \tan^2 x.$$

Then 
$$y = \cot \left( \frac{2 \cot \theta}{\pi (1/2)} - x \right)^{-1} (x \cos \theta) - 2x$$

$$= 2 \cot^{-1} \left( \frac{2 \cot \theta}{\pi (1/2)} - x \right)^{-1} (x \cos \theta) - 2x$$

$$= 2 \cot^{-1} \left( \frac{2 \cot^{-1} (1/2)}{\pi (1/2)} - x \right) + 2 \cot^{-1} (1/2)$$

$$= 2 \cot^{-1} \left( \frac{(1+x^{2})^{2} + 1}{(1/2)^{2}} - \cot^{-$$

$$\begin{aligned} & = h_0 r^2 \left[ \frac{1 + \cos \theta}{-\sin \theta} \right] = \lg n^{-1} \left[ \frac{2 \cos^2 \frac{\pi}{2}}{2 \sin \frac{\pi}{2} \cos^2 \frac{\pi}{2}} \right] = \lg r^{-1} \left[ \cot \frac{\theta}{2} \right] \\ & = \ln r^2 \left[ h \cos \left( \frac{r - \cos^2 \theta}{r - \sigma} \right) \right] = \frac{r^2}{2} - \frac{\theta}{2} \\ & = \frac{\pi}{2} - \frac{1}{2} \cos^{-1} a \cdot d \operatorname{distant} \operatorname{graded} \operatorname{wide} \operatorname{get} \\ & = \frac{r + \sigma}{2} - \frac{1}{2} \cos^{-1} a \cdot d \operatorname{distant} \operatorname{graded} \operatorname{wide} \operatorname{get} \end{aligned}$$

#### 2.5.2 Implicit Differentiation

dy nextra Sina Ivrefied by are become access

$$y = fx^4 + 4x^2 + fx^3 + \sqrt{2}x \cdot S$$
 (2)

v is said, i.e. so decided point of the forms of v and wv = fv/v = fu/v there

I descending dispersion probability at equation of the North

$$2(y^2 + 5x^2y^2 + 7y + 5x^2 + 3) = 0 (1)$$

is  $(u_t, y_t) \in \mathbb{N}$  than elemental by semi-assert explicitly in lemma  $t \in \mathbb{R}$  that of the value of y depends upon m in the representation of the column alternations of connecting leading to  $\phi$  and sofictive court only  $(\phi)$  in the  $\phi$  may namez at covidinat functions satisfying court of  $\Omega_{i}$ 

Еск эмектры эмперет по разлиталь.

$$z^2 + \sqrt{2} - 20 = 0$$
 ... (46)

$$r^2 + r^2 = 27 = 7.$$
 (2)

In equation ( ), y may be septimized and interest on x by t y and a function x x fore we have txxfurgiously all  $\epsilon$  ( $\epsilon$  ) we intribute only in  $\epsilon$  were considered to be inconsidered variables  $\epsilon$  , and  $\epsilon$  , defined by

$$\gamma(x) = \sqrt{2x - x^2}$$
 and  $f(x) = -\sqrt{2x - x^2}$  with  $x^2$  explains  $f(x) = -\sqrt{2x - x^2}$ .

in agum on (b). There are no real wall waters that each setting it.

in expose  $\Pi_{i,j}(0)$  and  $\Pi_{i,j}(0)$  we say that  $\Psi$  is in implied in incline of  $\Psi$  can be sufficiently and in  $\Psi$  in the first  $\Psi$  of  $\Psi$  and  $\Psi$  in  $\Psi$ . such easies, we find the antivolve of yearn report to who the derivative on with report to taiby the process career mpi dellan dimerentiation. Origini tran, tenere veli ten Strerentiase impilatoly an equation incolori incultate car pale us on limb to introdict at another works of we shall resume into the runot on is **different ab** but

#### Example 1.

First 
$$\frac{\partial p^2}{\partial x^2}$$
 when  $x^2 + xy = 0^2 - 100$ 

Selection:

$$\mathbb{Q}_{N+1} = -\mathbf{v}(\mathbf{x}_{N} + \mathbf{y}) + \mathbf{y}' = \mathbf{1}_{U_{n}}$$

Given x' + yy + y'' = 100 Keeping it initially style a function of a million taking both sizes with  $x' \ne 0$ 

$$2x = \left(2\left(\frac{C_f}{C_f} + \frac{1}{f}\right)^2\right) = 2x \frac{C_f}{C_f} = 0$$

Example 2.

59

$$H(\mathcal{P}^{N,\gamma} + \gamma^{-N,\gamma} + \mathcal{P}^{N,\gamma}) | f \mid d \frac{\partial \mathcal{P}}{\partial \mathcal{P}}$$

Given 
$$f(x) = f(x) + f(x) + f(x)$$
 (3). Effected which should be substituted by  $f(x) = f(x) + f(x)$ 

$$\frac{2}{8}x^{2}\frac{\partial}{\partial x} - \frac{2}{3}x^{2}\frac{\partial}{\partial x} = 0$$

$$\frac{1}{2}x^{2}\frac{\partial}{\partial x} - \frac{\partial}{2}x^{2} = 0$$

$$\frac{\partial}{\partial x} = -\frac{\partial}{\partial x} - \frac{\partial}{\partial x} = -\frac{\partial}{\partial x}$$

Enumple 3.

for 
$$\frac{1}{2}y + 2\pi xy = 0$$
, find  $\frac{\partial Y}{\partial y}$ 

Sulutions

$$(x \circ Y - y \otimes Y) = x.$$

A horizonth no solution is less of ( ) with a regarding pressure on the weight

$$\begin{aligned} |B\phi(x,y)| & \cos x \cdot \frac{\partial y}{\partial x} - \sin xy \cdot \frac{1}{2} \left[ \frac{\partial y}{\partial x} + y \cdot \frac{1}{2} \right] = 0 \\ & = -(2\pi)^n e^{-y} \phi(y + xx) \cdot y \cdot \frac{\partial y}{\partial x} - y \cdot xy \cdot y \end{aligned}$$

$$\Rightarrow -2y = \cos(xA\frac{2y}{dx} - y \cos y)$$

Example 4.

$$F = \sqrt{\cos x + \sqrt{\cos x + \sqrt{\cos x + \dots}}}\cos x + \sin x + \sin x + \sin x = \cos x.$$

Solution:

$$\begin{array}{ccc} 2694 & & 9 = \sqrt{\cos x} & x \\ \Rightarrow & & x^2 = \sin x + x \\ \Rightarrow & & 9^2 = \cos x \end{array}$$

o toronilating will ±, waiget

$$S_{\lambda} \frac{d^3y}{dx} - \frac{2y^2}{dx} = -4y^2 - \epsilon$$

$$\Rightarrow \qquad \qquad (1.120)\frac{GV}{GV} = 2V v.$$

#### 2.5.3 Legarithmic Differentiation

i i i delle de Sima il- de distribitata di socia lungians, ve ll'intitudi lega firma sportioni dilleretesse. Suanni a populati un leditega firmia diferentationi, filo e ucua Malthe in Martypes el propionio

- 1. When the given random is a product of some lumb are the higgins in convertable productions as some are this facilities.
- Attention versible control transported the discrimina chicarthorom. Quipost

De basye of shape and years distoration on notices one.

ter 
$$y = w/\sqrt{n2k}$$
ng logarnam miaettis des weiget 
$$\cos y = w \cos x. \text{ if Treat strag with a weiget}$$

$$\frac{1}{V} \frac{\partial v}{\partial t} = \frac{d}{dt} W \cos t \hat{\phi}.$$

$$\Rightarrow \frac{\partial \mathcal{L}}{\partial x} = \frac{e^2}{2\pi} (\exp \theta) + e^2 \frac{e^2}{2\pi} (\exp \theta)$$

#### Forcesso le 1.

Differentiate the following tund to a but, in

$$\{59,557,(25)$$

#### Sulution:

(a) Ly. 
$$\varphi = \gamma^*$$

Takug kaja i himofila ibai las, wanja

Differentiating with a, we got

$$\frac{1}{x^2} \frac{dy}{dx} = -x^2 \frac{1}{x^2} - x^2 y x \cdot 1$$

$$\Rightarrow \qquad \qquad \frac{\partial y}{\partial x} = -x (1 + 1 x y x) - x^2 (1 + 1 x y x)$$
(a) Let 
$$y = -\cos x(x) \text{ sincretnating } + x \cdot 1 x, \text{ the get}$$

$$\frac{2b}{ab} = -abh(a^a) \cdot \frac{b^a}{a^a}(a^a).$$

Now  $\frac{\partial}{\partial x} \cos^2 t$  legities in Argine to expectly in part (a)

#### txamp**ia** 2.

$$\int \mathbf{r}^{2} = \mathbf{e}^{4} + g_{3} \cos \theta + g_{4} \frac{d^{2}r}{ds} = \frac{2200}{224 \log r^{3}}.$$

#### Salution:

$$F(G_{i}, x) = (x - y_{i})^{-1} G_{i}^{2} G_{i} = (x - y_{i})^{-1} = x - y_{i}$$

$$\Rightarrow \qquad \qquad (1 + \log x) y = x.$$

$$\frac{v}{-\log v} = \frac{\frac{v}{-\log v} \cdot c \cdot ferentiating with, v \cdot con \cdot cot}{\frac{v}{-\log v}} = \frac{\frac{v}{-\log v} \cdot c \cdot ferentiating with, v \cdot con \cdot cot}{\frac{v}{-\log v}} = \frac{\log v \cdot c}{(1 + \log v)^2} = \frac{\log v}{(1 + \log v)^2}$$

#### 2.5.4 Derivatives of Punctions in Parametric forms

Union J y are we said to establish both a direptinity can alse-time in suffactive variable  $say(t) \in \mathbb{R}^n$  and  $t \in \mathbb{R}^n$  be such following and called taxaments timelions against think would be invested. He parameter

In order to line the scales was distance on a lost which is four, we use properties:

$$\frac{\partial y}{\partial x} = \frac{\partial y}{\partial x} \cdot \frac{\partial x}{\partial x}$$

$$\frac{\partial y}{\partial x} = \frac{\partial y}{\partial x} \cdot \frac{\partial x}{\partial x}$$

$$\frac{\partial y}{\partial x} = \frac{\partial x}{\partial x} \cdot \frac{\partial x}{\partial x} \cdot \frac{\partial x}{\partial x} + $

#### Example 1.

If 
$$s = a/7$$
 , on  $(5)$  we cut  $t = \cos t_0$  and  $\frac{dM}{dt} s \ge -\frac{\pi}{2}$ .

#### Sulution:

Open 
$$z = s(t + s(t)) \operatorname{sinc} y = s(1 + s(g))$$

Differentiality likely with the get

$$\frac{\partial v}{\partial t} = a(1 - \cos t)$$
and
$$\frac{\partial v}{\partial t} = a(1 - \cos t)$$

$$\frac{\partial v}{\partial t} = a(1 - \cos t)$$
We shall also 
$$\frac{\partial v}{\partial t} = \frac{\partial v}{\partial t}$$

$$\frac{\partial v}{\partial t} = \frac{\partial v}{\partial t}$$

$$\frac{\partial f}{\partial x} = \frac{\operatorname{sgn}^{2}}{a(1 + \operatorname{cred})} = \frac{2\operatorname{sn}^{2} \operatorname{cos}^{2}}{2\operatorname{cos}^{2} \operatorname{g}} = \operatorname{sn}^{2} \operatorname{g}$$

$$\label{eq:continuous_section} \left. - \left( \frac{2 h}{2 h} \right)_{h = 0} - \ln \left( \frac{\pi}{2} \right) = 0.$$

#### Txample 2.

Let evertable 
$$\frac{e^{it}}{1-e^{it}}$$
 when  $e^{it}$ 

#### Solutions

$$y = \frac{e^2}{1 - e^2} \sin 1 z = e^2 \cos 1 \text{ et } \frac{\partial y}{\partial z} \text{ e warned.}$$

 $D_{1}{}^{A}e^{i\omega_{1}}$  with with  $A_{1}^{A}e^{i\omega_{1}}$ 

$$\frac{dy}{dz} = \frac{\left(1 - \frac{d^2y}{dz}\right) \cos^2 z - \frac{d^2y}{dz}}{\left(1 - \frac{d^2y}{dz}\right)^2} = \frac{2\pi^2}{\left(1 - \frac{d^2y}{dz}\right)^2}$$
and
$$\frac{dy}{dz} = \frac{2y^2}{dz}$$

$$\frac{dy}{dz} + \frac{\frac{dy}{dz}}{\frac{dz}{dz}}$$

$$\frac{dy}{dz} = \frac{2\pi^2}{\left(1 - \frac{d^2y}{dz}\right)^2} \times \frac{dz}{dz} = \frac{1}{\left(1 - \frac{d^2y}{dz}\right)^2} = \frac{1}{2}$$

# 2.6 Applications of Derivatives

There are two sites (World donns, 1988 are 1985).

- Increasing gradition assign, undured
- χ Mayimanna Mira (8
  - $\xi_{\rm NS}$  . Felako maximakso:  $\frac{1}{2}$  0. 0
  - igen wyget ei wambandininge
- ) Indoors on JipAs own with Script Letter is 14 or Functions.
- 4. Secondomination (1) A

# 2,6.5 Increasing and Degreesing Functions

gg. The entractable can clear definition makes  $\partial \phi$  -associated by the stricted recessing to with regardles as  $\partial \phi$  accessed of  $\nabla \phi$ .

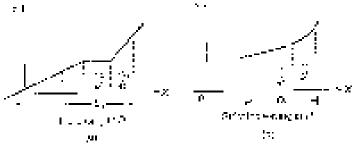
ve al

$$\begin{aligned} & x_{1}(x_{1}) = \frac{x_{1}}{x_{1}}, \\ & x_{2}(x_{2}) \Rightarrow \theta(x_{2}) \in \Omega_{x_{1}}(x_{2}). \end{aligned}$$

and  $G_{2}$  when as not necessing in some (a) monotonically demand a uncludy its  $\lambda$  b

 $f_{\rm PL} \approx 1$ 

$$\begin{aligned} & \mathbf{v}_1, \mathbf{v}_2 = 20 \\ & + \mathbf{v}_2, \Rightarrow \mathbf{v}_2, \mathbf{v} \in \mathbb{Q}_{2}, \end{aligned}$$

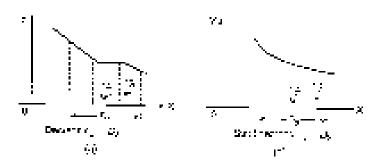


As given any discontant a contact the single interpretation of the value of the subset of Fig. (

1: 41  $\mathbf{z}_{0} \in \mathbb{R}^{2},$   $\mathbf{z}_{0} \in \mathbb{R} \rightarrow \mathcal{B}_{0} (\mathbb{R}^{2})$ 

and a smaller x with the recently D with the monotonically D and represents the C , C

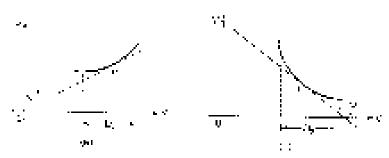
or at  $\begin{aligned} \omega_1, z_1 &= D_2 \\ v_1, z_2 &\mapsto \pi u_1 + \mathcal{D}(z) \end{aligned}$ 



# 2.6.1.1 Conditions for an increasing of a Decreasing Function

Now we shall see I by to use derivative of a time  $i_0$  to determine where  $i_0$  is increasing and p let q the decreasing

We know that the perivative (filt exists) as a point  $P_{i}$  of purpostope steme the close of the range n to the curve a 🙃



In a line with measurement there was that in the energy momenting from (0,0) in (0,0) and (0,0) therefore langen in the survivious  $\Phi(z)$  of every somittle  $\Phi_{0}$  that some integral z by z being a fix at an z z was Interest to the  $t \in \mathcal{T}(s)$  of  $\lim_{n \to \infty} u_n > 0$ .

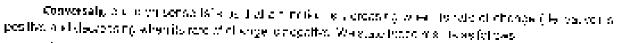
At all a or a , a is all a and a (i) a and a is a a this, a denoted by a in a is a, a in a and a in a i The tangent of the curve  $v \in \mathcal{U}_{\mathcal{F}}$  at every p(v) of  $\mathcal{D}_{\mathcal{F}}$  makes access angle quarter the presidence of energy. , where the  $\phi \circ \psi \to r(\omega \circ \lambda) \circ \{1, 2, 1, 2, 2\}$ 

Zut de mutter ray ki der exemple. Su elder field d
$$(x,y)$$
 ,  $Q_{\mu}(x,y)$  ,  $q_{\mu}$ 

A portion of tary works shown in figure 10 significative investigation of If deposit, here  $f(x) = 2e^2\sin x$  star f(x) = (1,200) . At so the close of the tangent of  $\mathbf{v} = 0$  to that an already by the expension

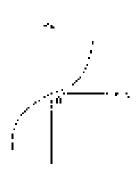
In Soil, we have:

- Of under the figure state of the property of the state o
- , which are for decreasing  $i\in D_{i}$  (a substant  $i\in I_{i}$  ),  $j\in I_{i}$  , and  $j\in I_{i}$  $Y \subseteq \mathbb{L}_{\infty}$



Theorem 1: if a limitation of the continuous  $u_i(z)$  by i , the Herebook in (A,B) size

- $1 = |\hat{\Pi}(s)| \wedge (\operatorname{den}(\operatorname{alike}(s), s), \phi) \text{ then not become } (g, n, a, b)$
- $Z = \ell(z) \times J$  or all  $z = \{e \in V_n \text{ that the small processing } p \in M\}$



**Theorem 2**: the function f is early update  $[\{a,c\},a,c\}$  by  $\forall ab=i$ ,  $\{a,c\}$  and

- $t = \ell(r)$  will be also need of them that a coordinate in [2]  $\ell(r)$
- t = 0 (a.  $t \in \mathbb{N}$  for  $t \in (x, y)$  then fixed satisfied additioning in [x, y] .

Researching toping toping of the section is and to select the contract Machine to the contract of the contract

**Carollary.** Farchet campins continuous  $\pi_i(a,b)$  perivants in (a,b) with

- $f = (7e) \times Correct (free breakspringer abendariser or courts who <math>\sigma(0) = 0$ . Let  $f(e) \times Cf(0) = 0$  and f(e) = 0 for  $f(e) \times Cf(0) = 0$ .
- $S = P(x) \times 0$  for all  $x \in (0, \infty)$  expect to consider a number of some  $x \in P(x) = 0$ , then  $A(x) \in S$  for  $A(x) \in S$ . In (2. S)

#### Esample 1.

. Hereworthal and function  $P_{\mu \nu} = \Phi_{\mu \nu} \circ \Phi_{\nu} \circ \operatorname{Subs}_{\mu \nu} \circ \operatorname{material}_{\mu \nu} \circ \Phi_{\nu \nu} \circ \Phi_{\nu \nu}$ 

#### Salutian:

Covern

$$C_{2} = 0.64 + 0.02 = 0.02$$

force that displayed ions are differential orders and  $\mathcal{M}_{i}$ 

Therefore the even function  $m: \mathbb{R} \to \mathbb{R}$  up,  $h(\hat{n} = s)$ 

We the given time on a stripty moreovily  $L(Y_{i})>0$  in the  $X_{i}$ 

lange, La gisen in contra attibiging Month Month of Art ab Q

#### Crample 1.

Prove that the Linetton e™ is strictly indicating on M.

#### Solution:

. . . .

$$\mathcal{L}(t) = \mathbf{s}^{\alpha}(\mathcal{L}) + \mathbf{0}$$

EitHere til in a som  $-2.896 \text{ M}_\odot$ 

$$M_{\rm H} = e^{2\pi i z} \cos \theta \cos \theta \cos \theta$$

 $\rightarrow$  "talls so lettering count of

#### Example 3

Provided  $\frac{\partial}{\partial t} f(x)$  is some of the example quantum of

#### Solunian:

$$|f(x)| = \frac{2\pi}{\lambda} + \pi + G_{\lambda} - G + \frac{1}{2}G$$

Of invariant prof(s), 
$$2 \le (1/2^2) + 6 = \frac{2}{3^2}$$
.

ightarrow the givennumetron is of any decreasing

#### Еханнойс 4.

Problem (a.  $\int e^{i(y)} e^{i(y)} f(y) dy = 8e^{i(y)} + 15e^{i(y)} f(x) f(x) f(x) dx dx$ 

#### Salutions

$$f(x) \mapsto x^g \cdot (Gx^2 + 10x - 10x) f(y = f^2)$$

$$\begin{split} d_{\rm SM} &= d_{\rm T}^{\rm obs} - 3 \cdot 2 + 15^{\circ 2} - 2 p^2 + 4 p + 5 t \\ &- 2 (p + 5)^2 + 16 \cdot 2 - 1 \cdot 14 \cdot 12 t^2 \pm 0 \cdot 5 t \pm 1 \cdot 10^{\circ 2} \end{split}$$

 $\rightarrow$  r(s) is employ normal by Lineton for all  $\lambda \in \mathcal{X}$ 

#### Example 5.

Hodinain avais is such the following functions present the narrating of  $x_1,y_2\mapsto x_3y_2$ 

$$(20.16 \text{ f}) = 10 - 30 - 340$$

$$(0,0,0) = (1 - 2.2 + 26.4 + 7.4)$$

$$W(-\theta'r) = -2r^2 + 3r^2 + 12r +$$

#### Solunian:

$$\theta(r) = -10 + 6\gamma + 2r \cdot 2\gamma + 2\gamma = R.$$

Differentiating diversities well ger

$$f(x) = (1 + 3(1 + 2)(2x + 4) \cdot q_1 + (q_1 + q_2) \cdot q_3)$$

$$\Xi_{1}(n_{3}) = 0.45 \text{ get } \frac{20 \pm 3240}{5} \text{ Ps}^{3}$$

$$\Rightarrow \qquad -1 \frac{7}{5} = 0$$

By their start, and a Maa dentity  $\operatorname{conk}_{AB} = \frac{A}{2}$ 

Firstly, this ratified boost on the number time as igetime in the large picture.

So the critical point discress too motificances the involve regions and horse  $x \in \left[-\frac{2}{3}\right]$  and

$$A \subseteq \left[ \begin{array}{c} \frac{N}{2} & k \\ \frac{N}{2} & k \end{array} \right]$$

throwed the first tensor is weakly at the engine of  $\left(-\frac{3}{2},\infty\right)$  (which contains x=0 ) by

Agist in eachire lunction to stift it also saving

Therefore in the offic sequential  $z = \left(-n - \frac{3}{2}\right)$  is this region in which the function is entary the whole y

This exponent to be body by  $s_i$  will into another, in each exponent to an initial training

$$f(x) = x^2 + 12x^2 + 23x + 17, D = B^2$$

 $D(P^{\infty})$  is denoted with all we get

$$\begin{aligned} F''(t) &= \Re t^2 - 54 \pi + 58 - 5(\pi^2 + 12) \\ &= \Re (x - 2) (x + 6) \end{aligned}$$

$$|P-P(g, f)|_{\mathcal{D}_{p}} = 0$$
 (c. 25)  $|2f(g-f)| = 0$ 

$$=$$
 6 20% Gr - 8

 $\operatorname{relarg}(\operatorname{resent}(n))$  points on sector for the specific of existing the (n)

was we the f(0) + 2[0-2](0-1) was which is possive and we discrepant to (-0.7) which is a loss x + 0 contains both an arms and

Increase in the lies are g(t) at  $x \in \{0, 0\}$ , the for similarity decreasing such the seeling of  $x \in [0, \infty]$ . The function is again this, y is one exists. This collision is the following degree where  $x \in \{0, \infty\}$  for an area on either that  $x \in \{0, \infty\}$  for an area on either that  $x \in \{0, \infty\}$  for an area on either that  $x \in \{0, \infty\}$  for an area of  $\{0, \infty\}$ .



so the ingression which the limb of strictly the coston out  $t = 2 \times 10^6$  . Where the region in y is other bornes of a small, decreasing two  $\pm 10^6$  %.

(c) Given 
$$\label{eq:condition} \langle c_1 \rangle = +2\pi^2 + 2\pi^2 + 2\pi + 1 \cdot 2g + 3f$$

Differentialing with at well qui-

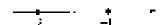
$$\begin{aligned} f(x) &= -(x^2 + 7)x + 7; \\ &= -(x^2 + 7)x + 7; \\ &= -(x^2 + 7)x + 7; \end{aligned}$$

Follog f(x) = 0 for f(x) + 2 f(x) = 0

$$\Rightarrow \qquad (x + 2)(x + 1) = 0$$

$$\Rightarrow \qquad x = -2 \sin (x + 1) \sin (x + 1) \cos (x + 1)$$

That is the standard control of the interface of a the identical policy



So the office: point divides to a motiful reconsists that it is neglect when we have  $x_1 \in X_1$  and  $x_2 \in X_2$  and  $x_3 \in X_3$  and  $x_4 \in X_4$ .

Now we first those in Social 2005 in f(z) = -12 which is negative surprecipitation of the  $(z^2 + 1)^2 + 42$  which  $(z^2 + 1)^2 + 42$  in the processing z.

The related formore, abjection region becomes off to  $x\in (-2,+1)$  interpretable is which yield becomes on interpretable at the relation of a specimentary decreasing. This is shown in the discrete set of the second of the seco



So the first hard on the fact that substituting size (-2) is an observed in the first of the double section in the (-2) Given (-2) in (-2)

# 2.6.2 Relative or Local Maxima and Minima (of function of a single independent variable)

**Definitions:** A fund, on 0 yill seed to be a location relative modification at  $x = e^{-1/4}$  are cylicitative if moon a such that,  $0 \neq e = e^{-1/4}$  and the relative  $1 \neq e = e^{-1/4}$  and  $1 \neq e = e^$ 

A function rule is said to be since in relative mornion also by inflore dealers in silve number 8 silve following is a replace for a local particular series in the inflored trial of the series of the series of the series of the inflored trial of the series of the seri

Maximum and Minimum volume of a fund, on a congretter whereast deperture volume vertical relations and the construction and the second second based a state of the contract of

fig. of the standard TOPA is as expense value as in selectioning Points.

# 2&21 Properties of Relative Modern and Minima

- Adjection at leadings or one minimum regular settlers were delivered or an inclose
- $S = \mathsf{Max}(\mathsf{num}(\mathsf{abs}),\mathsf{min})$  in values must also the length of
- S. The energy position made concentration with well-explicated and the
- 4. രവസം വരുപ്പെടുത്തെ വരുന്ന വരുന്നു. വരുത്തിൽ വ്യക്ഷം (ഉദ്യവത്തി ക്രാന്ത്യമായുടെ വുടക്കുക വരുന്നു.
- Such Limital  $v \in \partial_{v}^{n}(v)$  with similar  $v \in \mathcal{A}_{v}^{n}(v)$  and generally described as p(v) and p(v) are p(v) and p(v) and p(v) and p(v) and p(v) are p(v) and p(v) and p(v) are p(v) are p(v) and p(v) are p(v) and p(v) are p(v) are p(v) are p(v) and p(v) are p(v) and p(v) are p(v
- If the signal hydrones has considered as we have a fixed proving the intermediate of the province of the x=y.

### 2.6.2.2 Conditions for Maximum or Minimum Values

to represent the matter of the same of the continuous section of  $x=\pi(x)$  and  $\pi(x)=y$ 

# 25.23 Defention of Stationary Values

A limit on the situation  $\mathbf{I} + \mathbf{s}_{\mathrm{obs}}(\mathbf{y}_{\mathrm{obs}}) = \mathbf{s}_{\mathrm{obs}}(\mathbf{y}_{\mathrm{obs}}) = \mathbf{s}_{\mathrm{obs}}(\mathbf{y}_{\mathrm{obs}}) = \mathbf{g}_{\mathrm{obs}}$ 

Fig. (i.e. in other r(z) in power science of matter z=z through to small z says z=z.

# 2.8.24 Sufficient Conditions of Maximum or Atlaham Values

There is a most in  $(-p) \, \partial \mu (a(x+a)) \, \partial (a) = 0$  and  $\sigma (a) \, a$  requires

Similarly there is a multi-quip of f(x) at  $x = w^{(i)}f(x) = 0$  and  $f'(x) \in G(x)$ 

Number II  $J^{n}(s)$  is also constructed. There we have some very constitution of a maximum of a majorithm of  $\gamma_{s}$  is a second form with a majorithm  $J^{n}(s)=0$  . For  $J^{n}(s)$  is adaptive there will be a majorithm and  $J^{n}(s)=0$  . There will be majorithm and  $J^{n}(s)=0$  . There will be majorithm and  $J^{n}(s)=0$ .

Figure and I, that  $P'(x) = P'(x) + \dots P'^{-1}(x) + 1$  and P'(x) = 0 with the contradiction of extremely a matrix of P(x) for a maximum P'(x) in a particular substitution of P(x) and P(x) in a particular substitution of P(x) and P(x) and P(x) in a particular substitution of P(x) in the particular substitution of P(x) in P(x) in the particular substitution of P(x) in the particular su

# 2625 Working rule for Madula and Mirama of Ital

- I Pod Flateric spublic to some
- 3. So within that ling objects for i , let us rectain  $a_i, a_j$  . Then  $\mathbf{r}(i)$  is strictly  $a_i = a_i \cdot a_j$  .... It that  $i \in A$  ,  $a_i = a_i$  are the drug to bis at which f(x) is a genular turn of a change  $a_i$ .
- 3. First "(x) and substitute in the compare of  $\phi_2$  ..... whereas P(z) is the random matrix of which were "(x) is the property of the experiment."

# 2.6.3 Working Rules for Finding (Absolute) Maximum and Minimum in Range (e, e).

Let  $\Gamma$  be a finite of the financial of  $\delta$  (so eps. 'possibly as the  $\Gamma$  -by respect to the finite  $\Gamma$  -by  $\Gamma$  (so that  $\Gamma$  is a finite possible  $\Gamma$  -by  $\Gamma$ 

- Process © acts coins we are to t= 0.
- $\lambda_{\rm c}$  . Evaluation (s) at Tiplicomposition was a started way very taken as  $\kappa_{\rm c}$
- Find Spiegr (59).

Then the loss in this shock with we also chearly maximum as the given tunes on the u to the uniform of these values in the absolute in a maximum change set function v.

#### Txumple 1.

Plivi The observe maximum and minimum values on

$$(a_1^2 + b_2^2) = 2a_1^2 + 2a_2^2 + 2a_3^2 + 2a_4^2 + 2a_5^2 + 2$$

$$(01/c\lambda) = 1a(x^{4/3} - 3\lambda^{3/4}) x \in [-1/1]$$

électic pair xodiment a and mouto

#### Solution:

$$(g) \cdot f(x + f) = 2x^2 + 6x^3 + 16x + 5.$$
 (7)

Lik ač medižbio zada La  $oldsymbol{n}$  je  $oldsymbol{n}$  , theo bits a  $oldsymbol{n}$  je $oldsymbol{n}$ 

Differentiating (into ratio) we get

Also  $1.2\,$  millione in [0.8] the plane is and 2 polls transitionary configuration in  $\mu\mu$  in a

The alma, invariable to maximum with r=4 and the desolute further twice r=6. The  $a\approx 1.64$  maximum is 3 and the point of minute  $a\circ a$ 

(c) to ver, 
$$f(x) = f(x^{n_0} - f(x^{n_0})) + f(x^{n_0} - f(x^{n_0}))$$

e hereneaung (r) witter weiget.

$$\begin{aligned} f(z) &:= 12 \, \frac{4}{3} x^{2n} - 6 \, \frac{1}{2} \, x^{2nn} - 16 x^{2n} - \frac{3}{1} z^{2n} = \frac{220 x - 1}{12 x^{2n}} \\ \Psi w, & f(z) &:= 0 \\ & \frac{2(9 x - 1)}{3} = 0 \\ & z = \frac{1}{8} \end{aligned}$$

An  $\frac{1}{6} < 1$  ,  $H_0 = \frac{1}{5}$  is a office, point.

Also we have from rising. If ferentiable  ${\rm A}(\alpha=0)$ 

$$\begin{aligned} \frac{110}{12x^2} &= -10^{12} \frac{10^{12}}{18} = \frac{10^{12} \frac{10^{12}}{18}}{18^2} = 12 \left(\frac{1}{2}\right)^{1} - 8x_0 \\ &= -10 \cdot \frac{1}{18} + 3 - \frac{2}{4} + 3 - \frac{9}{4} \\ &= -10 \cdot \frac{1}{18} + 3 - \frac{2}{4} + 3 - \frac{9}{4} \\ &= -10 \cdot 10 - -20 \cdot 100 = 0 \\ &= -10 \cdot 10 - -20 \cdot 100 = 0 \end{aligned}$$

$$= -10 \cdot 10 - -20 \cdot 100 = 0$$

$$= -10 \cdot 10 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

$$= -10 \cdot 100 - -20 \cdot 100 = 0$$

Instruction while making unity also a 15 and the assolute minimum value  $-\frac{6}{2}$ . The j single

#### Esumple 3.

uis gi-on that ni a il i ine i i nga na படுதிய மடி Statens is makin என்றை கண்டி நடிக்கு இதிய பிருந்து

#### Splutton:

$$\partial y) = x^{4} + (2x^{4} + 2x + 9)$$
 (1)

are offerendance to let will [1] [2],

Figure 1.  $\Rightarrow$  (5.5 galactic abuse)

$$f(x) = f(x) - f(2x) - a$$

$$F(1) = 4.78 + 124.7 + 6 = 0 + 120.$$

Second of the i is the i in (i maximizer value to according to a constant i and i in i and i in i

#### 2.6.4 Taylor's and Mecleurin's Series Expansion of Functions

#### 28.4.1 Tendor's Series

74.999 and 5.1446 = 5 centralizes be dominated in  $x, y \in \mathbb{N}$ , and (ii) 255, and (iii) received the  $x \in \mathbb{N}$  and  

$$J(\mathbf{a}+h) = \mathbf{r}(\mathbf{a}) - R^{\alpha}(\mathbf{a}) + \frac{h^{\alpha}}{2} f^{\alpha}(\mathbf{a}) + \dots + \frac{h^{\alpha}}{2} f^{\alpha}(n+6h) \qquad \dots (6)$$

will a value categorith aromael Lagrang-Act, modiling and incremander  $a_{ij}^{*}$  being  $\frac{\pi^{ij}}{i!} E_i$  (an 3%

Consider the Law (e.g. 
$$-\frac{1}{2}(x) + (x - y - x) f(y) + \frac{(x + y - y)^2}{2} f(x) + \dots + \frac{(x - y - y)^2}{2} f(x)$$

wre o K is decided ac-

$$f(\mathbf{x} + \mathbf{t}) = f(\mathbf{x}) - c_{0} \left(d(\mathbf{t} + \frac{\partial}{\partial t})^{2} (d\mathbf{x})^{2} - \frac{\mathbf{g}^{2}}{2} \mathbf{g}\right)$$
 (6)

 $1 = \mathbb{P}( (\forall e^{-i}(\mathbf{x}) \cap \mathbf{x}) = \ldots, (\forall e^{-i}(\mathbf{x}) \text{ are continuous in } [A \otimes e^{-i}(\mathbf{x}) \cap \mathbf{x}] = \emptyset ) \otimes \mathbb{P}( (\otimes e^{-i}(\mathbf{x}) \cap \mathbf{x}) \otimes \mathbf{x}) \otimes \mathbb{P}( (\otimes e^{-i}(\mathbf{x}) \cap \mathbf{x}) \otimes \mathbb{P}( (\otimes e^{-i}(\mathbf{x}$ 

$$2 = \operatorname{Mich policies}_{\mathbb{R}^n} := \frac{(x + t) - x^2}{t_0 - t^2} = t^n(x) - K$$

$$3 = 4(8) \qquad \qquad 23 = c(c - E) \qquad \text{By (3.3)}$$

let  $\psi(x)$  as the condition of TiMe's theorem, one therefore that exists to each one number  $\psi(x)$  and the prior x and y are y

Nuclei Informati ik kaj prodije in 120. po godinje.

Casif.  $akm_i s = -\ln(1)$ , by orsition ammounds tell about the Mau-Value Lee am-

Con 2. For  $n \ge 2$  and h = n + (1), we get

$$g(t) = g(0) - g^{2}(0) - \frac{e^{2}}{2} f^{2}(0) - \frac{e^{2}}{2} f^{2}(0) \qquad (111)$$

region is known as Machael the state on with listing a vigal for a life in a rice

#### Erample

If  $f(x) = f(y) \cap f(x)$  as it using raylors theorem, show that none  $g(x) \in F$ 

$$|\log((1-y)| = |x - \frac{x^2}{2} - \frac{x^2}{|y| + w^2}.$$

#### Schutinn:

Such that we key 
$$(1-\epsilon) \approx \epsilon - \frac{\epsilon^2}{2} + \frac{\kappa^2}{2}$$
 , for each

By Mapput of Silting on with  $\alpha$  is in let  $P_{\alpha}$  well see

$$\Re x = \Re \Theta + 2 P(0) = \frac{e^2}{e^2} P(0) + \frac{e^2}{e^2} P(0) = \frac{e^2}{e^2} P(0) + \frac{e^2}{e^2} P(0) = \frac{e^2}{e^$$

Hax

$$\Phi(x) = \{ \log(x + 1) | x \in \Phi(x) = 0 \}$$

$$\mathcal{D}(t) = \frac{\pi}{1+\pi}, \qquad \mathcal{D}(t) = 1$$

$$\langle T^{*} \rangle = \frac{1}{(2+\epsilon)^{2}} \qquad \Delta X^{*} = -1$$

erd.

$$\label{eq:condition} |\alpha \gamma(x)| = \frac{2}{(1-\alpha)^2} \; , \qquad |\alpha \gamma(x)| = \frac{2}{(1+\alpha)^2} \; .$$

Substituting (i.i.) we define 
$$|q_i - 1| = \frac{x^2}{2} + \frac{x^3}{3(1 - 3x_i^2)}$$
 ...(1)

Bridge vitt states of Reik C

$$\label{eq:continuous} \sigma = (1) - 4 \omega^2 + 1 \cdot \omega_0 - \frac{1}{(1 - 3\omega)^2} \cdot \omega_0 +$$

$$|x| = -(x + \frac{y^2}{2}) \frac{x^2}{3(1) \pi x^2} = x - \frac{y^2}{2} + \frac{x^2}{3}$$

$$|\exp((x-y)| < |x - \frac{y^2}{2} + \frac{y^2}{2}|$$

#### 3.6.4.1 Machine 16's Series

II 4x) Si Telegran et aktar christage eg Den

$$f(x) = f(0) + w^{2}(0) + \frac{x^{2}}{2}x^{2}(0) + \frac{x^{2}}{3!}f^{2}(0) + \dots + \infty$$
 (1)

130% possessed derivatives of all process and the tentaineer  $P_i$  or (2) on page 134 tenes to zero as  $c = r_i$  that the Mattern is the definite of the Vacations series (1).

#### Example:

Using Maximum so the case whose  $(p, \epsilon)$  and a more darking  $e^{i \epsilon}$ 

#### 5-Autions

JUNE 50 67

Substitutura il e veluco di agri, 1900 ditalim il di Madaurinia seriosi deligisi

$$ta(z = 0) = 2 \times 100 \frac{z^2}{2!} = \frac{z^3}{3!} \times 1 \frac{z^4}{4!} \cdot 1 = \frac{z^3}{5!} \cdot 10 \dots$$
$$= 2 - \frac{z^3}{3!} + \frac{2z^4}{15!} = \frac{z^4}{15!} \cdot 100 $

#### 2643 Expansion by Yau of Known Yeres.

When the departs and Albana call where it earling up to find less terms, it will be consenies to be into by the blowing work arown cores

$$1, \quad z = 0 \Rightarrow 0 + \frac{z^2}{N} + \frac{n^2 + n^2}{M + z} = \dots...$$

$$|S_{i}||_{2}^{2} \ln n \, \delta = |B_{i}|^{2} \frac{n^{2}}{13} \cdot \frac{n^{2}}{3} \cdot \frac{n^{2}}{3} \cdot \dots \dots$$

$$3. \quad (z \otimes v) = (-\frac{c^2}{2^2} \cdot \frac{d^4}{d^4}) \cdot \frac{\theta^2}{21} +$$

$$|4-\cos \theta| |b| = -4\frac{4^2}{2} + \frac{6^2}{4} + \frac{6^2}{6} + \dots,$$

$$S_{ij} : \operatorname{def} 0 \neq 0 \mid \frac{\partial^2}{\partial t} = \frac{\partial}{\partial t} \partial^2 t \dots \; .$$

$$= B_{\alpha} \cdot s_{\beta} \cdot r^{\beta} \cdot s_{\beta} \cdot \left( \frac{1}{\alpha} \cdot \frac{\sqrt{\alpha}}{\alpha} \right) \cdot \left( \frac{1}{\alpha$$

$$7 = |w'| = |14| \pm 4 |\frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} +$$

**a.** 
$$c_0(1-x) = x - \frac{\pi^2}{2} + \frac{\pi^2}{3} = \frac{3}{2} + \dots$$

$$\mathbf{S}_{n} = \log \left(1 - z\right) = -\left(y + \frac{z^{2}}{y} + \frac{z^{3}}{z} + \frac{z^{3}}{4} + \dots \right)$$

$$\mathbf{a}_{n} = \exp \left(1 - x\right) = -\frac{x^{2}}{2} + \frac{x^{3}}{2} + \frac{x^{3}}{2} + \frac{x^{2}}{2} + \dots + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \dots + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \dots + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \dots + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \dots + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \dots $

#### Example:

Fig 600 ef Pring Van land it's series of otherwise upto the reprocesse miscost.

We have, 
$$\|e^{\chi_{12}} - e^{\chi_{12}}\| = \|f + a \, g\|_{L^{\infty}} + \frac{(2 \, \Gamma \chi)^2}{9!} + \frac{(2 \, \Gamma \chi)^2}{9!} + \frac{(2 \, \Gamma \chi)^2}{2!} + \frac{(2 \, \Gamma \chi)^2}{2!} + \dots$$

$$\begin{split} &= 10 \left[ \left( x + \frac{x^2}{2} + \dots \right) - \frac{\pi}{2!} \left( x - \frac{y^2}{2} + \dots \right) - \frac{1}{2!} \left( x + \frac{x^2}{2!} + \dots \right) - \frac{1}{2!} (x - \frac{y^2}{2!} + \dots \right) - \frac{1}{2!} (x - \frac{y^2}{2!} + \dots \right) - \frac{1}{2!} (x^2 - \frac{y^2}{2!} + \dots ) + \frac{1}{2!} (x^2 - y^2) + \dots \\ &= 10 \dots + \frac{y^2}{2!} - \frac{x^2}{2!} - \dots \end{split}$$

Otherwise, so

$$\begin{array}{lll} f(x) &= f(x) & f(x) & f(x) \\ f'(x) &= e^{-x} (\cos x + (x) \cos x + (x) \cos x + (x) \cos x \\ f''(x) &= f''(x) \cos x + f'(x) \cos x + f'(x) \cos x \\ f''(x) &= f''(x) \cos x + 2f'(x) \sin x + f'(x) \cos x \cos x \cos x \cos x + f''(x) = 0 \\ f'''(x) &= f'''(x) \cos x + 3f'(x) \sin x + f''(x) \cos x \cos x \cos x \cos x + f''(x) = 0 \end{array}$$

94 (CH4) Ju

5-1556 (Fig. 1) without of \$100, \$700 and the Proping synthetists of the

$$\begin{split} G^{2,2} &= (1+x+1)^2\frac{x^2}{2^2} + \frac{x^3}{3} \cdot (1+\frac{x^4}{4!}\cdot (-3)) \cdot \dots \\ &= (1+x)^2\frac{x^2}{2} + \frac{x^4}{6} + \dots \end{split}$$

# 2.6.5 Slope Determination of Line

In the subsection to a more dependentially in the inverse of providing t=t=0 is a inequality of the t depends  $\frac{dt}{dt}=0$ .

9. If we interview perpendicular the uproduct of thems operations to leave places, as for the depending tipe and anythem absolutegous ditry. If you have one corporate that the

Includes the assumption of the offer on any other of parameters of parameters of parameters of parameters.

$$\frac{dx}{dy} = F(y)|_{Q_{x}(y)}$$
 is the spectroplengen is point  $(x_1,y_2)$ 

#### 2.7 Partial Derivatives

# 2.7.1 Definition of Partial Derivative

a derivative of a function of coveral independent valuables peround with realisation by employ from the office of costs constants it is said to be partial chicketive. The population of linking that partial chicketive of a function of linking that on the chicketive of a function of marginal entire decreases.

The symplectic way explicated to contract the contract of the

If x = (0, x, z) and the different electron of leaving the control of x, y is a chief not systimating the first set x > x keeping then x > x as x > x.

# 2.7.2 Second order partial differential energic lents

If  $J=M_{\bullet}$  (At the Aultrian), and avalant fixed it empersual transmitters a part of the agent of order does given by

We use  $\frac{\partial}{\partial z}\left(\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{\partial}{\partial z}\left(\frac{\partial}{\partial z}\right),\frac{\partial}{\partial z}\left(\frac{z}{z}\right),\frac{\partial}{\partial z}\left(\frac{z}{z}\right)$  as social order varied deliver we set to one those such

respectively denoted by 
$$\frac{\partial^2 g}{\partial x^2} = \frac{\partial^2 g}{\partial x^2} = \frac{\partial^2 g}{\partial x^2} = \frac{\partial^2 g}{\partial x \partial x} = \frac{\partial^2 g}{\partial y \partial x}$$

**lessed** to  $-2\pi/2$  and to period period values a continuous. For order of side order on a notable to

$$\frac{\delta^2 u}{\delta \omega_0^2} = \frac{1^2 u}{\delta \omega_0^2} \, .$$

# 2.7.3 Homogenous Functions

As expression in which every tent is of the some degree is called becongeneat function. Thus  $g_{\mu\nu}=g_{\mu\nu}$  ,  $g_{\mu\nu}=g_{\mu\nu}$  ,  $g_{\mu\nu}=g_{\mu\nu}$  and  $g_{\mu\nu}=g_{\mu\nu}$  and  $g_{\mu\nu}=g_{\mu\nu}$  and  $g_{\mu\nu}=g_{\mu\nu}$  and  $g_{\mu\nu}=g_{\mu\nu}$  be where

$$\mathcal{L}\left[ \frac{\partial}{\partial z} + a_1 \left( \frac{y}{z} \right) + a_2 \left( \frac{y^2}{z} \right) + - A_3 + \left( \frac{y}{z} \right) \right] \right] = a_2 \left( \frac{y^2}{z + z} \right)$$

$$\gamma = 2\pi \left(\frac{N}{r}\right)$$
 where  $\left(\frac{N}{r}\right)$  is some fixed  $\frac{d}{d}$ .

Sinte: Take a whomes a government by I (m, y) along agains as on words out or for wend to be follows:

Then  $g_{ij}(y_i)$ ,  $g_{ij} = y_i$ ,  $g_{ij}(y_i)$  is the fire  $y_i$  or  $y_i$ ,  $y_i$  is the morphodus of Lettines and Charles and School of Schools and Schools an

**bote**: To is a non-uper our number of all and biolidegree will an Broke one cut it alle was less expand to purpose relief and the second of the course of the first course of the cours

#### 2.7.4 Eular's Theorem on homogenous lunctions

It distances a spann with relation and and velocity  $\theta \mapsto \theta (\theta)$ 

$$x \frac{\partial p}{\partial x} \approx p \frac{1}{2\pi} = -p \mathbf{g}$$

**Note:** Bulety: The remission for extended to a homogeneous function of thy national distributions. Thus for

$$r(y-y_1,\dots,y_n) \text{ be a honogoner } k + y_1 + x_2 + x_3 + y_2 + \dots + x_n \text{ degree } r \text{ then } x \cdot \frac{x_1^2}{2x_2} + x_2 \cdot \frac{\partial f}{\partial x_3} + \dots + x_n \frac{\partial f}{\partial x_n} + 0 \text{ for } x_n = 0 \text{ for } x$$

#### Para no mileo

For the limit  $x \in \mathbb{R}^3$  ,  $\|y^2\|_2 \gg y_0 + y_0$  is a horizong energy of the first of diagram 2.

#### Salvalon:

Now, 
$$\frac{\delta v}{u^2} = 3y^2 \text{ and}$$

$$\frac{\partial v}{\partial v} = -3y^2 + 5xy$$
Now 
$$v \frac{\partial v}{\partial v} + v \frac{\partial u}{\partial v} = v(3^{-3} + 5y^2) - V(6y^2 + 6xy)$$

$$= 5(x^2 + y^2 + 3xy^2)$$

$$= 5$$

So the left accommodes that one although the state of the  $3.0999\,\mathrm{M}_\odot$ 

# 2.8 Total Derivatives

IF

$$\gamma = \langle \tilde{q} \rangle / \langle \tilde{q} \rangle$$
 or equ.,  $\phi (q_{i}^{*}) \rangle$  and  $\phi + c_{ij} (t)$ 

Iner,

$$\frac{dx}{dt} = \frac{\partial u}{\partial x} - \frac{\partial x}{\partial t} - \frac{\partial x}{\partial x} + \frac{\partial y}{\partial t}$$

Let  $\frac{\partial x}{\partial x}$  is abled the model there is possible and a with respect to a of the  $\frac{\partial x}{\partial x}$  and  $\frac{\partial u}{\partial y}$  are paginal solutions at u

Using 83 for  $\approx$  35 for the fix,  $\gamma$  is inversed as  $\gamma$  . The distance transition will some verificities  $\gamma$  when

$$\frac{\partial \mathcal{Q}}{\partial t} = \frac{dx}{d\tau} + \frac{\partial \mathcal{Q}}{\partial t} + \frac{\partial \mathcal{Q}}{\partial t} + \frac{\partial \mathcal{Q}}{\partial t} + \frac{\partial \mathcal{Q}}{\partial t} = \frac{\partial \mathcal{Q}}{\partial \tau} + \frac{\partial \mathcal{Q}}{\partial t}$$

his result can be extended to any nivil Lens Lossing eg.

**Corollary 1**: 1,766 / for our mile energy wile in statutes on other than

$$\frac{dv}{dv} = \frac{\partial v}{\partial x} + \frac{\partial u}{\partial y} \cdot \frac{\partial v}{\partial y}$$

$$\frac{\partial u}{\partial x_i} = \frac{\partial u}{\partial x_i} + \frac{\partial x_i}{\partial x_i} + \frac{\partial u}{\partial y_i} + \frac{\partial y_i}{\partial y_i}$$

**3**1 ::

$$\frac{dd}{dt_0} = \frac{\partial u}{\partial x} + \frac{\partial v}{\partial t_0} = \frac{\partial u}{\partial y} + \frac{\partial y}{\partial t_0}$$

**Considerly 3:** Harrison your connected as along latter of the son  $\mathbb{Z}[x,y] \cap \mathbb{C}$  ,  $\omega$ 

$$\frac{dy}{dx} = \frac{\partial r/\partial x}{\partial t/\partial x}$$

# 2.9 Maxima and Minima (of Function of Two Independent Variables)

# 2.9.1 Definitions

Let f(x,y) be any x > 0 or  $x \neq y$  or dependent out although the accordance to an earth number of these satisfaction of a characteristic x and y beginning y.

The right condition material material we denote by (x,y) and (x,y) and (x,y) and (x,y) are the first production of the first production of the first production (x,y).

# 2.9.2 Necessary Conditions

The redescrib continuous that  $\phi_1 \not\in \operatorname{strond}(x_0)$  is noted in the principling  $y_1, y_2 \in \mathcal{Y}_{0} \setminus \mathcal{Y}_{0}$ 

$$\left. \frac{\partial f}{\partial t} \right|_{t=t_0^{\infty}} = 0 \text{ and } \left. \frac{\partial f}{\partial t_0(\frac{\pi}{2})} \right| = 0.$$

#### 2.9.3 Sufficient Condition for Maxima or Minima

$$\mathrm{Hom} = \left(\frac{\partial^2 r}{\partial x^2}\right)_{\substack{k = 0 \\ k \neq 0}} \left(|z| = \left(\frac{\partial^2 r}{\partial x^2}\right)_{\substack{k = 0 \\ k \neq 0}} \right) = \left(\frac{\partial^2 r}{\partial x^2}\right)_{\substack{k = 0 \\ k \neq 0}} \left(|z| + \left(\frac{\partial^2 r}{\partial x^2}\right)\right)_{\substack{k = 0 \\ k \neq 0}} \right)$$

General Struggled Hove a maximum வரைப்பாளராக வரிய அரசு பிரி வக்கோ பெடிய இருந்து நகுகளுர் ஒன நாராயாகவை விரும் சாட்ட கூடுவிக்கு நாற்று. ஒத

Case 2(a), which have not describe an entropy of the  $z_0 x_0 y_0 + b \hat{x}_0 x_0 x_0 y_0 + b \hat{x}_0 y_0 + b \hat{$ 9542

раже 1 : 1 : нан Я

# 2.10 Theorems of Integral Calculus

- The integral of the about of a person and an incident about  $10\,\mathrm{bc}$  at the left of the solutions. integration authors
  - To be fix in exact, then  $(\lambda^{\alpha}(x), \lambda^{\alpha} + \lambda^{\alpha}, \lambda^{\alpha})$  as
- The integral of a spin of multilegeneral As the annual and the difference of all the sum of a forestood of Tr⇒plana Zyr Ladirály.

$$\int (f_1(x)+f_2(x)+f_3(x)+\dots+f_n(x))\,dx=\int f_1(x)dx+\int f_2(x)dx+\int f_3(x)dx+\int f_3(x)dx+\int f_3(x)dx$$

# 3.10.1 Fundamental Formulae

$$f_{n} = \int d^{n} dx = \frac{d^{n-1}}{n-1}$$

$$7. \qquad 6 \text{ mad } 27 = 6667$$

$$\delta_{ij} = \frac{1}{2} \cos \beta_{ij} \Delta_{ij} = \tan \beta_{ij}$$

$$\Psi = \int \frac{1}{\sqrt{1-2^2}} \, dx = 5 \, r^{-1} \, dr$$

$$11. \int \frac{1}{v_0^2 v_0^2 + 1} dx = 950 \text{ for}$$

$$||\nabla \cdot \int d|\theta| |\nabla u|| d\theta = 276 \cdot 64$$

$$2 + \int_{-\infty}^{\infty} dv = c g x$$

$$|A_{ij}\rangle = 0.05 \times e^{i\phi} = 8.6 \times$$

$$(C, -\frac{1}{2}G_{1}\otimes G_{2})^{2} \cap G_{1} = -n \otimes n$$

$$-10 - \int_{-1}^{\infty} \frac{1}{16\pi^2} d^3x = 8\pi^{-1} x.$$

Has 
$$\int \cos^4 \theta_0 = 0$$
 in  $\delta \lambda$ 

# 2.10.2 Useful Trigonometric Identities

	U I	ا :	- -::	2	*	<b>.</b>	s.:     2	25
in:	Ċ		5	√2 3		ſ.		 
	•	्रह , १	VZ	1   2			J	<b>-</b> "
	7	1 ()	•	Ų.	<b>~</b>	J ,	:	- -:

- 1 2m(|x|) = 2mx
- 3 2x(2x) 2xx
- 3.  $\sin(x + y)$  where  $\sin x = \cos x + i \sin x$
- $\mathbf{e}_{n} = \mathbf{d} h(\mathbf{p} \mathbf{p}) = \mathbf{a} h \cdot \mathbf{d} h \mathbf{a} \mathbf{p} + \mathbf{b} \mathbf{a} \mathbf{h} \text{ Mag}.$
- 5. Specially is considered in the why
- $\xi_1 = \cos(\phi + \phi) = \cos \phi \cos \phi + \sin \phi \sin \phi$

$$7 = \left| \cos \left( \frac{\sigma}{\sigma} - z \right) \right| + \sin v$$

$$0. - 8T \left(\frac{\pi}{2} - \lambda\right) = \cos c$$

$$\beta = 10 - 2\pi \left(\frac{\pi}{2} + \chi\right) = \cos(4\pi - 2\pi) \left(\frac{\pi}{2} + \chi\right) = -\pi i \gamma s$$

$$\hat{\theta}(\hat{p}) \cdot SO(\pi + 1) + \delta O(\hat{p}) SO(\pi + 1) = - s(g)$$

$$(x) = \sin x + \sin (x)\cos (x) + \sin x$$

$$(d) \cdot d \cdot (2\pi \cdot x) = -5.04(x) \cdot (-3.86(2\pi \cdot x) + 0.5.86$$

16. 
$$|x| |y| + |y| = \frac{667 \times 1.3117}{1 - 16 (5.3115)}$$

$$bar(y - y) = \frac{brn x - tany}{1} \cdot rangement$$

$$2 \cdot \tan\left(\frac{\pi}{4} - \epsilon\right) = \frac{1 \cdot \tan x}{1 \cdot \tan x}$$

$$10 + an \left(\frac{r}{4} - z\right) = \frac{1 + tec}{1 + tec} x$$

$$14. \ \, \sin(y + y) = \frac{\cos(x \cot y)}{\cos(x + \cos y)}$$

$$\operatorname{dist} \operatorname{Colin}(x,y) = \frac{\operatorname{Colin}(x,y)}{\operatorname{Colin}(x,y)} \frac{1}{\operatorname{Colin}(x,y)}$$

13 × (2x) = 201 (2x) (-y) 
$$= \frac{2\pi x - y}{1 - 2x^2 x}$$

17 Post(
$$\Delta t$$
) = 0002  $t + x = 0$  ( $\gamma = 2 \cos \theta + t - 1 - 1 - 2 \cos \theta + t = \frac{\cos^2 \theta}{1 - \cos^2 \theta}$ 

$$18. | | ran Sy | = \frac{|\Delta ran | \gamma|}{16 | | ran | \alpha|}.$$

$$1.5 \cdot \cos^2 x = 1 - xi i^2$$

2. 
$$\cos^2 x = 1 - xi \, f_{i,1}^2$$
  
2.  $g_i^2 = \cos x + x - i \, r_1$ 

## 2.10.3 Methods of Integration

There are various methods of integration by which we can be one given integral to lpha and eta every standard in + yeak. The plane is a pain point alone of its against  $\epsilon$ 

 ${f u}={f Integration}$  by substitutions  ${f d}$  of our grain the variable of integration becomes substitutions of the grain  ${f u}$ Coldenoria into pay.

$$H^{-1} = \int f(x) dx \cdot \Phi(x) \exp \left( \int f(x) dx \exp \left( \frac{1}{2} + \frac{1}{2}$$

$$\label{eq:continuity} \omega = \omega_{0}^{*} \nabla_{\theta} \cdot a \cdot \log_{\theta} \frac{\partial \chi}{\partial \theta} = \frac{1}{4} \nabla g$$

$$T(\varphi)\cdot\frac{\partial P}{\partial P}=\frac{\partial P}{\partial P}-\frac{\partial P}{\partial P}=P(A\cdot \varphi P)\cdot P(A\cdot \varphi P)\cdot P(A\cdot \varphi P)\cdot P(A\cdot \varphi P)$$

To a graph 
$$I = \int I_{ij}^{*}(0) \cdot d\Omega^{ij} dt$$

#### Rule to Remember:

Toeski och [միքայ ֆանիժո

where a(b) is the Pherent distance (without b(b) ) with respect to a.

#### Three Forms of Integrals:

$$g_{ij} = -\int \frac{f'(x)}{f(x)} \, dx = \log f(x)$$

eg) – Wej Priharamaing weiget (%) - dk = 50

$$= - \frac{r(\phi)}{r(\phi)} \gamma_{\mathcal{S}} - \left( \frac{\phi}{2} \right) = \operatorname{pod} (-1) \operatorname{gr}(\theta).$$

Thus, for integral of a happy we know the cross of the east of the definition of the degree 0 in the constitution 0 and 0 in 0.

#### Example:

$$\frac{1}{124} \frac{4x^3}{4x^4} \sigma_7 = \log(1/(x^2)) \tag{1}$$

$$(\hat{g}_{ij} - \operatorname{specimen}_{ij} a_i) = \left(\frac{-a_i}{a_i} + \operatorname{clos}_{ij} (a_i + a_j)^2 + a_j \right).$$

Some imported ( Raymoine Based on the Al) we Form:

$$\begin{array}{ll} 0) & \qquad \int \cos u \, dv = \int \frac{d^m x}{\cos x} \, dv = -\int \frac{1}{4} \frac{(\sin x)}{\cos x} \, dx \\ & = -i \, \eta + \cos x \, dx \\ & = \log (\cos x) \, dx \\ & = \log (\cos x) \end{array}$$

$$p(x) = -\int p(t) dt dt = -\partial_y \phi(t) \Delta t$$

(1) 
$$\int g g(y) = \log f(g(y)) \quad \text{for } g(y)$$

$$g_{k_1} = \int d\sigma \sin s = \exp\left(i\sigma r \frac{e^{\lambda}}{\sigma}\right)$$

$$p(t) = \int |\mathcal{R}(t)|^{2} P(\mu) d\mu = e^{\frac{2\pi i \int_{t}^{t} dt}{2\pi i t} \left[ \frac{1}{2} \left( \frac{1}{2} \frac{\partial u}{\partial t} \right) + \frac{1}{2} \left( \frac{1}{2} \frac{\partial u}{\partial t} \right) \right] dt + \frac{1}{2} \left( \frac{1}{2} \frac{\partial u}{\partial t} \right) + \frac{1}{2} \left( $

glis function  $\pi$  distribution to provide in Cylon  $\pi$  d, to both it the integral we increase the incoming uppy of the integral of the cylindrocated in doc. This is forwards **power** for the

#### Formulas:

$$0) = \frac{2\pi i (\sigma x + \mathcal{B}(\alpha) + \frac{2\pi i (\sigma x + \alpha)}{\sigma} \alpha)}{\sigma}$$

$$\left\{\hat{\mathbf{u}} = \int_{0}^{t} \frac{d\mathbf{u}_{t} \mathbf{v}_{t}}{d\mathbf{u}_{t} + \mathbf{v}_{t}^{2}} \left[ \mathbf{u}_{t} = -\mathbf{s}(\mathbf{v}_{t}) + \frac{\mathbf{v}_{t}^{2}}{\sqrt{s}} \right] = \left\{ \mathbf{v}_{t}^{2} + \mathbf{v}_{t}^{2} + \mathbf{v}_{t}^{2} \right\}$$

$$\mathcal{F}(t) = \int \frac{dt}{dt} \frac{dt}{dt} = e^{it} \frac{1}{2\pi i} \left[ \frac{e}{2\pi i} \right]$$

$$0.1 + \left(\frac{C_{0}}{\frac{1}{2}(1-\alpha^{2})} + C_{0} e^{-i\alpha t} \left(\frac{\alpha^{2}}{\alpha^{2}} + 12A_{0} a + \sqrt{\epsilon^{2} + a^{2}}\right)\right)$$

$$\begin{aligned} w_i &= \left( \sqrt{a^2 + a^2} \cos \left( a - \frac{1}{2} \right) \sqrt{a^2 + a^2} + \frac{2^2}{2^2} \sin \left( a - \frac{1}{2} \right) \right) \\ &= \left( a - \frac{a}{2} \right) \left( a^2 + a^2 + \frac{a^2}{2} \cos \left( a - a^2 \right) \right) \end{aligned}$$

$$w(1-\left(\sqrt{2^{n+1}})^{\frac{n}{2}}\operatorname{dx} = -\frac{n}{2}\left(\sqrt{2^{n}} + x^{\frac{n}{2}}\right) \operatorname{dx}^{\frac{n}{2}}\left(\frac{x}{x}\right)$$

#### Integral of the present of two functions.

integration by parts: Let slarg is be two full (tip) is of vill the line lie value in differential case. As

$$\frac{\partial}{\partial x}(xx) = x \cdot \frac{\partial x}{\partial x} + x \cdot \frac{\partial x}{\partial x}$$
 (1)

Integraling bold added on the am respectively well swe

$$J_{\theta} = \int u - \frac{du}{dx} dx - \int u - \frac{du}{dy} dx$$

$$\Rightarrow \int u \frac{du}{dx} dx - u dx - \int u - \frac{du}{dx} - dx \qquad ...(1)$$

$$\Rightarrow \int u dx - u dx - \int u + u dx$$

In some assume whose the  $\int d^3x dx = \int dx + \int dx dx$  with

The production function will be a singlet syning of  $\mathbb{R}^n$  in  $\mathbb{R}^n$  is vary important a coving by magnetic by parts.

hall A Himetropies pero sociale that

LATE and a Na

- gu yerga (gengal etrip (am arakta) ilik albah sekit de 🗘
- Location of the contraction of the page 1997 and - A LArvin as fundamental ( $A = A^T + A^T = B = B$  obt.)
- Third in a self-of the mark (8) 2, 5/4 x 5/2 f.
- Eld Exponential lengton length letter.
- We obtain all the two functions comes that  $p \in T$  , get the igneral bias p and differential on gettings graded as P.

#### Formulae Based Upon Above MctWcl:

$$\langle g_{i,j} \rangle = \left( \langle g^{(i)} | g_{i,j} \rangle \langle f_{i,j} \rangle / 2^{k_i} \right) = \frac{g^{k_i}}{(d_i + 1) + k_j} \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \right) \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \langle f_{i,j} \rangle - f_{i,j} \rangle - f_{i,j} \otimes \langle g_{i,j} \rangle - f_{i,j} \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \rangle - f_{i,j} \otimes \langle g_{i,j} \rangle - f_{i,j} \otimes \langle g_{i,j} \rangle - f_{i,j} \otimes \langle g_{i,j} \rangle + \left( \langle g_{i,j} \rangle \rangle - f_{i,j} \otimes \langle g_{i,j} \rangle - f_{i,j}$$

$$(201) \int d^{\frac{1}{2}} d^{\frac{1}{2}} d^{\frac{1}{2}} d^{\frac{1}{2}} d^{\frac{1}{2}} = \frac{d^{\frac{1}{2}}}{d^{\frac{1}{2}} + \ln^{\frac{1}{2}}} (20000 \, d_{11} + d_{12} \, d_{11} \, d_{12})$$

#### Megnation by Partial Fractions:

In this case 
$$\frac{d}{dx} \frac{d^2}{dx^2} \left( \frac{dx}{dx} \right) = \frac{1}{dx} \log \frac{H - \pi}{dx - \pi} \left( A + \pi \right)$$

The following is a currently of a cheroi. Let integrate dense a contribution of the three interests of megation.

$$\lim \int_{\mathbb{R}^{2} \times \mathbb{R}^{2}} \frac{1}{dt} dt = \inf_{\Omega} \operatorname{diff} \left( \frac{dx}{dt} \right)$$

$$0 \le \int_{\mathbb{R}^{d}} \frac{1}{Z} dx = \frac{1}{2\pi} \log \frac{S - x}{S - x}$$

$$(m - \int \frac{1}{e^2 \ln a^2} e^{ix} = \lim_{n \to \infty} \lim_{n \to \infty} \frac{1 - e^2}{n + a}$$

$$0.1 + \int_{\frac{\pi}{\sqrt{2}}} \frac{1}{2^n} \left[ a_n + \sin \theta \tau \left( \frac{f(x)}{\sqrt{2}} \right) + O_{\epsilon} \left[ x + \sqrt{2} \tau \right] + c \right]$$

$$(2) - \left[ \frac{1}{\sqrt{2 - \sqrt{2}}} \cos \alpha + \sin \beta \left( \frac{\lambda}{2} \right) \right]$$

$$0) = \int_{\mathbb{R}^{N_{p}}} \frac{1}{s^{2}} \operatorname{d} \mathbf{v} = s \otimes s^{-1} \left[ \frac{s}{s^{2}} \right] = \log \left[ \mathbf{v} - \frac{1}{s} \right]^{\frac{N}{2} + \frac{N}{2}} \left[$$

$$(2) \quad \int \frac{1}{\epsilon a^{n+1} + a^{n}} da = \frac{1}{B} \operatorname{deg} \left( \frac{a}{a} \right)$$

$$(0) = \int d(x) + \sqrt{2} dx = \frac{d}{2} (dx) + \sqrt{2} (1 + \frac{d^2}{2})^2 dm + \left(\frac{d^2}{2}\right)^2$$

() 
$$-\int \sqrt{x^2 + x^2} dx = \frac{2}{2} \sqrt{x^2 + x^2} = \frac{\mu^2}{2} dx dx - \frac{\pi^2}{4\pi}$$

 $A/k = \epsilon$  in a constitution of the 0.000

$$(6) = \int\limits_{0}^{\pi/2} (1)^{-n} \lambda \cos^{n} x \cos^{n} x \cos^{n} \frac{1}{2} \left[ \frac{n_{1} - \frac{1}{2} - \frac{n_{2} - 1}{2}}{2!} \frac{\frac{n_{1} - \frac{1}{2} - \frac{n_{2} - 1}{2}}{2!} \right]$$

where T(t) is easily to a galaxian inclinative wave satisfies the following probability  $\mathcal{L}(t_0,t_1)=200$ 

$$J(n-1) = n \Omega$$
  
 $A = 0 + n$  The process with the second  $a = 0$  and  $a = 0$  a

for long collection is

$$\frac{\pi^{(n)}_{2}}{3} = \frac{2}{5} \frac{[(n - (2\pi - 2))^{2}] \frac{2}{3}}{[(n - 2\pi)^{2}] \frac{2}{3}} \frac{2}{5} \operatorname{second is } (10)$$

$$= \frac{(n)(n - 2\pi)^{2}}{[(n - 2\pi)^{2}] \frac{3}{3}} = \frac{2}{5} \operatorname{second is } (10)$$

$$= \frac{(n - f)(n - 2\pi)^{2}}{[(n - 2\pi)^{2}] \frac{3}{3}} \frac{2}{5} \frac{\pi}{2} \operatorname{verket}(n + 2\pi)^{2}$$

# 2.11 Definite integrals

 $F_{ij}^{(n)}(\log z) = [F(r)]_{ij}^n + F(z) = f(r)_{ij}^n \text{ is the considering map } e^{-z} \text{ in a postular } i \text{ in } r \text{ is a finite of a finite$ 

# 2,11.1 Fundamental Properties of Definite Integrals

 $1 = m_0 \log_2 \int_{-1}^{\infty} f(x) dx = \int_{-1}^{\infty} f(x) dx \log_2 x dx = 0 \text{ the inverse of the approximation of the inverse of the product of the inverse of the i$ 

$$(g_{ij}) = -\frac{2\pi i}{2} \frac{\partial g_{ij}}{\partial x_i} - \frac{2\pi i}{2} \frac{\partial g_{ij}}{\partial x_i} + \frac{2\pi i}{2} \frac{\partial g$$

$$q_{\mu, \lambda} = - \int_{0}^{\lambda} \operatorname{d} v \left( \operatorname{d} u + q^{\mu} \left( v \right) \right) \right)_{1} = \mathcal{F}(\lambda) - \mathcal{F}(\lambda)$$

$$\int_{\mathbb{R}^{n}} f(t) dt = \int_{\mathbb{R}^{n}} f(t) dt = F(2t + \epsilon) dt$$

- $2 = \int_{\mathbb{R}^2} \langle (y) | dy = \int_{\mathbb{R}^2}^2 f(y) dy$  interchanging the limits of a definite integral at noon not of stage in the absorbed value but a large the kight integral of
- $\gamma = \eta / \mu \, \eta \eta / \rho = \int_0^\infty \eta_{\lambda}(q_{\lambda}) = \int_0^\infty \eta_{\lambda}(q_{\lambda}) + \int_0^\infty \eta_{\lambda}(q_{\lambda}) d\rho$

**Note 1:** The property a and order the even A, we perform a section to the interval (a,b). **Note 2:** In all a and a

$$T_{\rm MBH} = - \int_{0}^{\infty} n_{\rm A}(\phi_{\rm m} = \frac{1}{10}) f(\phi) d\phi + \int_{0}^{\infty} f(\phi) d\phi - \int_{0}^{\infty} f(\phi) d\phi = - \pi \int_{0}^{\infty} f(\phi) d\phi$$

- $A = \left( \gamma_{1} 2 \beta \gamma_{1} \gamma_{2} \beta_{2} \beta_{3} \right) \left( \frac{1}{2} \delta_{3} \frac{\beta}{\beta_{3}} \delta_{1} \beta_{1} + \frac{\beta}{\beta_{2}} \beta_{3} \beta_{3} \right)$ 
  - $(f_n) = \mathcal{H}^{(n)} \otimes \operatorname{res} \int_0^{\pi} \mathrm{d} f_n(g) dx = \int_0^{\pi/2} (g g) dx$

$$j=\frac{\omega}{2\pi} j(r) \rho g$$

for r>r . Case of  $r=\infty$  and  $\exp\chi=0, \ r=0$  and  $\exp\chi=0$  , r=0

$$= i + \int_{0}^{0} f(x - t)(-t) = \int_{0}^{t} f(x - t) dt + \int_{0}^{\infty} f(x - t) dt$$

 $\label{eq:condition} \mathcal{D} = \int_{-\infty}^{\infty} f(t) dt = 0 \text{ or } P_{2,0}^{(n)}(t) dt \text{ as a condition as } f(t) \text{ is an expectation of } t \in \mathbb{R}_+$ 

## Odd Mid Ewin function

in). A recollentian simply 
$$\hat{\eta} \in [\eta_{\rm c}]$$

(b) A level function of 
$$(1/4\pi) = d\omega_0$$

$$\xi = \frac{\partial x}{\partial x_1 \partial x_2} \partial x_1 + \gamma \int_{\mathbb{R}^3} f(z) dz - \beta x(2z - z) = f(z)$$

$$\Phi_{i}:=-rac{-i\eta_{i}}{i\eta_{i}}f(r)dr_{i}+\cdots-f(r)dr_{i}+i\eta_{i}r_{i}+i\eta_{i}r_{i}$$

Corollary: 
$$\int_0^{2\pi} (2\pi/2\pi) = \int_0^{\pi} (2\pi/2\pi) = \int_0^{\pi} (2\pi/2\pi) = 2\pi/2\pi$$

$$\int_{0}^{\infty} f(x) dx = i \int_{0}^{2} f(x) dx.$$

$$1 \cdot 1 = (y + y)$$

 $[a \ eri \ M \ c \ contain + 15] \mapsto a_0 \ g^*$ 

$$\mathcal{S} = \frac{d}{dt} \int_{-t_0}^{t_0} f(r) \ dr = f(\Psi(r))^{\operatorname{opt}} f(-1) \phi(g_1(g))$$

# Example 1.

Lookethe lotowing but it is integrated

$$(a)=\prod_{i=1}^{N}(i+2i)G_i$$

$$-100 \int_{0}^{1} |x-x-y| dx$$

#### Solucian:

$$\begin{array}{cccc} \text{cons} \\ (0) & \text{Singe-for} & \forall x \neq x = x \mid \chi + 2 \leq y) \\ & \Leftrightarrow & & \text{[$\mu$ = $7$ = $-(x = 2)$} \\ 0.0154 & 2 \leq \mu \leq 2 , x + 4 \leq x \\ & \Rightarrow & & \text{[$\mu$ = $2$ = $-x + 5$]} \end{array}$$

$$\begin{array}{lll} \Delta & = \int\limits_{-2\pi}^{2\pi} \left[ x + \delta^2 \right] d\sigma & = \int\limits_{-2\pi}^{2\pi} x + 2 \frac{g}{2} dx & \qquad & \text{(Displaying)} \\ & = \int\limits_{-2\pi}^{2\pi} - \left[ x + 2 \right] dx & = \int\limits_{-2\pi}^{2\pi$$

. Consider the second of the second problem is  $\mu = \pi + \mu + \pi + \mu$ 

A solar  $\delta s \sim \delta \log d + |s| \delta T \rightarrow |s| + |s| + |s| + |s| + |s|$ 

$$\frac{1}{2} = -\frac{1}{2} \| [d] + [d + b] \log a = -\frac{1}{2} (|a - b| + 3) (2b + \frac{1}{2} (|b| - |b| + 3) (2b)$$
 (Property 3)

$$= \int_{0}^{2} (x - (x - 0)) dx + \int_{0}^{2} (x + x - 5) dx$$

$$= \int_{0}^{2} (x + 0) \int_{0}^{2} [A(x - 0)] dx$$

$$= \int_{0}^{2} (x + 0) \int_{0}^{2} [A(x - 0)] dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x - 0) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + x - 0) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + x - 0) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + x - 0) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + x - 0) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + 1) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + 1) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + 1) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + 1) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + 1) dx$$

$$= \int_{0}^{2} (x + 1) + \int_{0}^{2} (x + 1) dx$$

#### Example 2

Evaluate  $t = \lambda (\epsilon \sin \alpha) \sin \alpha \sin \alpha$  and

$$(d) = \int_{\mathbb{R}^{N}} f(x) \, dx \text{ where } f(x) = \frac{(2a+1)^{n-2}}{a-n} + c \cdot \int_{\mathbb{R}^{N}} \frac{|a|}{n} \, dx = (d) \cdot \int_{\mathbb{R}^{N}} Sx \Big[ dx \Big]$$

#### Salucion:

(g) . First when the their great function is discribed to as g(x)=1

$$\int_{0}^{2} f(x)dx = \int_{0}^{2} f(x)dx + \int_{0}^{2} f(x)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (x - 2)dx$$

$$= \int_{0}^{2} (2x + 1)dx + \int_{0}^{2} (2x + 1)d$$

while risk more than  $\frac{\lambda_{i}}{a}$  is discontinuous with  $a\in C$ 

$$\begin{split} \hat{\Gamma}_{\lambda}^{(1)}(x) &= \int_{-\pi}^{\pi} dx + \frac{1}{6\pi^{2}} dx + \int_{-\pi}^{\pi} \frac{1}{2\pi} dx + \int_{0}^{\pi} x dx \\ &= (x + \pi) \cdot x + 0 \Rightarrow (x + \pi) \text{ and } 0 \le x \le 1 \Rightarrow (x + \pi) \\ &= \int_{0}^{\pi} \left[ (x dx + \int_{0}^{\pi} dx + \int_{0}^{\pi} x dx + \int_{0}^{\pi}$$

(c) it set note that (2a) is discontinuous at  $a=\frac{1}{3}$  and  $a=\frac{2}{3}$ 

$$\sum_{i} \left[ \Im z_{i} \right] \Delta Y_{i} = -\frac{4\pi}{6} \left[ \Im z_{i} \right] \Delta z_{i} + \sum_{i=1}^{3/6} \left[ \Im z_{i} \right] \Delta Y_{i} + \int_{2/2}^{1} \left[ \Im z_{i} \right] \Delta z_{i}$$

$$= -\frac{\Im z_{i}}{6} \left[ \Im z_{i} \right] + \frac{2\Im z_{i}}{6\pi} \left[ \Im z_{i} \right] + \int_{2/2}^{1} \left[ \Im z_{i} \right] \Delta Y_{i} + \int_{2/2}^{1} \left[ \Im z_{i} \right] + \left[ 2 \operatorname{d} z_{$$

$$= \frac{2a}{3} \left[ -\frac{1}{3} \left( -\frac{1}{3} \right) + \frac{3}{3} \left( -\frac{1}{3} \right) - \frac{1}{3} + \frac{3}{3} = 1 \right]$$

### Example 3.

BA Dirigiphose tes of definition. Ay an east, you dero locating.

$$(9) = \int\limits_{0}^{0.5} V^{-1}(Y, Q_1^2) = (1)^{-1} \int\limits_{0.5}^{0.5} V^{\frac{1}{2}}(Y, Y^{\frac{1}{2}}) \circ (1)^{\frac{1}{2}} \circ (1)^{\frac{1}{2}} \circ (1)^{\frac{1}{2}} = (1)^{\frac{1}{2}} \int\limits_{\Omega} |\nabla f(x)| \cdot |\nabla f(x)| dx = (1)^{\frac{1}{2}} \int\limits_{\Omega} |\nabla f(x)| \cdot |\nabla f(x)| dx = (1)^{\frac{1}{2}} \int\limits_{\Omega} |\nabla f(x)| \cdot |\nabla f(x)| dx = (1)^{\frac{1}{2}} \int\limits_{\Omega} |\nabla f(x)| dx = (1)^{\frac{1}{2}} \int\limits$$

# Sulution:

(a) Let 
$$g(x) = g(x^{-1})x^{-1}$$
  $g(x) = g(x^{-1}) +  

$$= \int_{-\pi^{0}}^{\pi^{0}} s^{-r^{2}} x^{r} dr = \int_{0}^{\pi^{0}} \left[ s(r) \cdot x dx - 2 \int_{0}^{\pi^{0}} \left[ 1 - s(s) \frac{2}{2} \right]^{\frac{r}{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ \left( 1 - 2 \cos(2x + c) e^{-r^{2}} \right) e^{\frac{r}{2}} dr$$

$$= \int_{0}^{\pi^{0}} \int_{0}^{\pi^{0}} \left[ 1 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{\frac{r}{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 1 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{\frac{r}{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 1 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{\frac{r}{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 1 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{\frac{r}{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 1 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{\pi^{0}} \left[ 3 - 2 \cos(2x + c) e^{-r^{2}} \right] e^{-r^{2}} dr$$

$$= \int_{0}^{$$

(b) Let  $f(x) = \frac{1}{2} x^{n-1} y = f(x) + 1$  of  $2 x^{n} / 2 y = 2 x^{n} y y^{n} y = f(x)$  $\Rightarrow h(x) \text{ and proved the size } (y \text{ proved} y) y.$ 

$$\prod_{i=0}^{n+1} v^{ij} \, \exists i^{n'} : d_{ij} \; = \; 0$$

So if of  $(a) = a \cdot b \cdot a + b \cdot (2a - b) \cdot a$ , so the  $(2a - b) = a \cdot b \cdot a + b \cdot b$ . This is the hope property of

$$\int_{0}^{\infty} \cos x \, dx = 2 \int_{0}^{\infty} |\cos x| dx \qquad (12)$$

v Francië arstroj respect

$$\int\limits_{0}^{2\pi} \frac{ds}{ds} ds \, ds = 2.2 \int\limits_{0}^{2\pi} s \, \log s \, ds + \int\limits_{0}^{2\pi} s \, g_{2} g_{3} \, ds$$

$$(1+o(o(a)) + \frac{1}{2}(-cos(a)) + cos(a) + cos(a) + cos(a) + cos(a)$$

$$= ||f[x)|| * ||f||^{2} + 4 \Big[ o(f_{x}^{(2)} + a) + 2 \Big[ o(f_{x}^{(2)} + a) + 2 \Big] + 2 \Big[ o(f_{x}^{(2)} + a) + 2 \Big]$$

### Example 4-

Figure 1.5 to 10 form  $z = \int\limits_{0}^{\infty} \frac{dx^2}{2 + x^{1/2}} \frac{dx}{88\pi} dx$ 

#### Solution:

Let  $f = \int_{-\pi}^{\pi/2} \frac{8 \operatorname{Fev}}{8 \operatorname{Fev}} dx$ 

Than by using groperly think 6 Jan

$$T = \int_{-2\pi}^{\pi/2} \frac{\sin\left(\frac{\pi}{2} - z\right)}{\sin\left(\frac{\pi}{2} - z\right) + \cos\left(\frac{\pi}{2} - z\right)} \sin 2x = \int_{-2\pi}^{2\pi} \frac{\cos x}{\cos x - \sin x} dx$$
 (3)

 $u_1 \circ u_2 \circ u_3 \in \mathbb{N}$  we follow

$$|2t| = \int_{0}^{\pi/2} \frac{2(1.5 - 1.78)}{n_{111} - 1.78} dx - \frac{\pi^{2}}{h} dx - \frac{\pi^{2}}{h} dx - \frac{\pi}{2} \frac{1}{2} dx - \frac{\pi}{2} \int_{0}^{\pi/2} dx - \frac{\pi}{2} d$$

#### Example 4.

Performance of writing (His MATMATIA SC

#### Solution:

$$g_{(1),-1} = \int_{\mathbb{R}} \log \left[ \frac{1}{\lambda} - 1 \right] dx = \int_{\mathbb{R}} \exp \left[ \frac{1-\mu}{\lambda} \right] dx \qquad (30)$$

The city in a grapophy 4%, we get

$$1 = \int_{0}^{\infty} dg \left(\frac{1+(1-x)}{1-x}\right) dx = \int_{0}^{1} ng \left(\frac{x}{1-x}\right) dx$$

$$= \int_{0}^{1} cog \left(\frac{-y}{x}\right)^{-1} dx = \int_{0}^{1} -1 ng \left(\frac{1-y}{y}\right) dx = -\int_{0}^{1} ng \left(\frac{1-x}{y}\right) dy$$

$$= -\frac{y}{y}$$

$$\Rightarrow \qquad y \in \mathbb{R}$$

Пет Бураградын уяына ас

$$D(x) = \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{2}{2} - \chi \right) \right] dy \left[ \frac{d\eta}{d\eta} - \chi \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{2}{2} - \chi \right) \right] dy \left[ \frac{d\eta}{d\eta} - \chi \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{2}{2} - \chi \right) \right] d\eta \left[ \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta \left[ \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( - \left( \frac{d\eta}{d\eta} \right) d\eta - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta \left[ \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta - \frac{d\eta}{d\eta} \right] d\eta \left[ \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right) d\eta \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} \right] d\eta$$

$$= \int_{0}^{2\pi i} d\eta \left[ 2 \left( \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} - \frac{d\eta}{d\eta} -$$

#### Example 6.

Even we the following set (i.e., we get a  $\int_{\Omega} \log n n \cos n n dn$ 

Salutiun:

$$T = \int_{0}^{\infty} \log \left(1 + \sigma(\theta x)\right) dx \qquad \qquad \dots (0)$$

Descriptioning probability for waigst

$$f = \int_0^\pi \log \left(1 + \cos(\sigma - \omega) \cos \gamma + \int_0^\pi \log \left(1 + \cos \alpha\right) d\alpha \right) \qquad \qquad \text{with}$$

Breading (born (i) welds.

$$\begin{aligned} Z' &= \int_{0}^{\pi} (|\nabla f|^{\frac{1}{2}} |\nabla f|^{\frac{1}{2}} |\nabla f|^{\frac{1}{2}} + \log(|-\cos x_{0}|) dx + \int_{0}^{\pi} |\nabla g|^{\frac{1}{2}} + \log^{\frac{1}{2}} \chi |_{\partial X} \\ &+ \int_{0}^{\pi} (|\partial g|^{\frac{1}{2}} |\nabla f|^{\frac{1}{2}} + |-2| \int_{0}^{\pi} |\nabla f|^{\frac{1}{2}} |\nabla f|^{\frac{1}{2}} + |-2| \int_{0}^{\pi} |\nabla f|^{\frac{1$$

 $\rightarrow$ 

 $S^{*}(\theta) = (0.547 \times \pm \theta_1 + \tau) = \log(\sin(0.17) + (0.547 \times \pm 0.047 \times \log n_1) \text{ years properly 5 the get}$ 

$$\int d^{2}x \int_{0}^{2} \int dx \sin x dx + 2 \left[ -\frac{6}{2} \cos 2 \right] = \ln \log 2.$$

# 2.12 Applications of Integration

Feigraphic furgetion is considered to the Peigraphic Control of the Pe

- Conversion and
- Z = LETYTT Y's rives
- 3 Polymer of heartig

# 2.12.1 Problembary: Curvo Tracing

If a require the district above the second as the energy g double for implient a grade, the condition in the conditions of the energy space g and g are the energy g and g

# Circle: Cartaslan Form:

z = w \* f > 0 to who eath (2, 0) and radius as



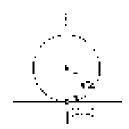
 $S_{\rm c} = (c_1 + c_2)^2 + (c_2 + c_3)^2 + c_4^2$  . One proving senting the wound had use a



#### Polar Form:

... v ∈ ac protokun omra (o tt andrad cela

 $S = C + a \cdot 0$  . Of a cival same  $\frac{1}{a} = \frac{a^2}{2a}$  and radius  $\frac{a}{b}$  .



 $(x, y) = \operatorname{seq}(\mathbf{x}, y) \quad \text{Circle with opening } \left[ \frac{d}{dx} \right]_{x}^{x, y} = \operatorname{school}(\mathbf{x}, y) \times \frac{dx}{dx}$ 

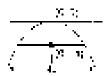


#### Perebole:

 $\sigma_{\rm c} = 3 \pm 4$  av . For another this vertex on (ii) to another to (ii) by zero, also see from  $\pm 4 s$ 



 $\theta = (1 + (4 \circ y)) \cdot a rate a with energias <math display="inline">(0 + (1 \circ y) + (1) \circ a \circ y)$  , at another section 4 or



3. If f=445 . Paralled-eviling order to (0.10) and to the ratio for an element  $g_{\rm c}(g)=g_{\rm c}(g)=445$ .



 $A_{\rm eff}/A_{\rm eff}$  in a total will be less exp() by your possibility and observation in the

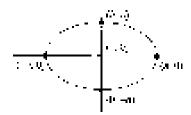


 $(b_1 + b_2 + b_3)^2 + 4st_3 + s_3^2 + 4st_3 + s_3^2 + 4st_3 + s_4 + 2s_3 + s_3^2 + s$ 



Elliose:

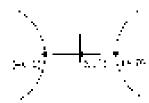
The  $\frac{d^2}{dt^2} + \frac{d^2}{dt^2} = 1$  . Express the parameter of the rational state dt = 2dt



 $|2z| = \frac{\sqrt{1 + c_1^{1/2}}}{\sqrt{c_2^2}} + \frac{(c_1 - b_1)^2}{\sqrt{c_2^2}} = 1 \text{ if these was controlling in (c), where the primary is set a 25 and in regions as <math>z = 25$ .



# Hyperbola:



 $\sum_{i,j} \frac{g^2 - g^2}{g^2 - g^2} = 1 \quad \text{Picherovial with over a triple property } (0, -\delta) \text{ such that } (0, 0)$ 

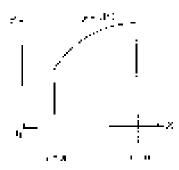


# 2.12.2 Areas of Cartesian Curves

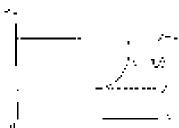
#### Thoseem

). After abunded by the only in  $\mathbf{n}_{i,j}^{t}$  decreases a 10th attendable with  $\mathbf{n}_{i,j}^{t}$  ,  $\mathbf{b}_{i,j}^{t}$ 

$$\int_{-\pi}^{\pi} \rho(\mathbf{v}) = \int_{-\pi}^{\pi} r(\mathbf{x}(\mathbf{v}))$$



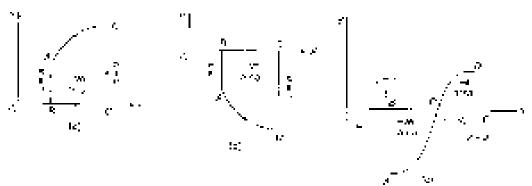
s. In a satisfying wave y is the Paradoromium, we see it of the troubusin we first the curve  $x \in \partial_x U^{-\alpha} C$  which and the absolute y = x, y = 0 is  $\frac{\partial u}{\partial x} \partial y = \frac{\partial u}{\partial y} \partial y$  as shown in Figure colors.



Note,  $f: \Pi \in \mathbb{R}$  an incuracy Ly with  $g \in \mathbb{R}$  to a contract that  $g \in \mathbb{R}$  in the standard note the curve.

The emphasisal factory includes of plane purvos is  $x' \mapsto (x_i) \cdot x' \cdot y_i$  and quadrature

Note, 2: Sign of solares, for area which should are just the limit of any other. As also also also because the limit of the should be also because the instruction of the limit of the lim



In Eq. (addiscretify area given by  $\frac{1}{2} x$  and with the degree that in with element  $ABC \Big[ - \int_{0}^{x} x \, dx + and$  in Section  $ABC \Big[ - \int_{0}^{x} x \, dx \Big]$ . In Section  $ABC \Big[ - \int_{0}^{x} x \, dx \Big]$  is the distance of the section  $ABC \Big[ - \int_{0}^{x} x \, dx \Big]$ .

Fig. style is the first eneming such categories in a real partial of the speciol each portion and subsystems of replacedly some frequency practical enemials and added attacking.

#### Esumple:

Find the stop of the length each straight and the variable  $L^2$  -  $E_{\gamma}(w)$  the W(w) -  $E_{\gamma}(w)$ 

#### Solucion:

$$\frac{1}{2} = \frac{1}{2} \frac{$$

Substituting the source of p from (1) to (1) we get

$$x^2 = -(x^2 + y)$$

$$x^2 + (x + y) = 0$$

$$(x + y) = 0$$

 $\Xi_{\rm CO}$  ) and (19) is is sufficient of an LQ price of a Borry  ${\rm color}(1+1)$ 

A Required when  $P(k+1, \ldots, k)$  the variety is particular to express the  $P(k+1, \ldots, k)$  and  $P(k+1, \ldots, k)$  are  $P(k+1, \ldots, k)$ .

$$= \int_{-1}^{1} y_1(x, hyr_1) dt - \int_{-2}^{2} y_1(x, hyr_2) g_1(x, hyr_2)$$

$$= \int_{-1}^{2} \frac{h(\frac{1}{2})}{2} dx - \int_{-2}^{2} \frac{h(\frac{1}{2})}{2} dx - \frac{1}{2} \left[ \frac{x^2}{2} + dx \right]_{-2}^{2} \cdot \frac{h(\frac{2}{2})}{2} dx$$

$$= \frac{1}{2} \left( 32^{n} + 64 \right) + (-244) \left( -\frac{1}{24} (542 + 84) + 348 \right)$$

# 2.12.3 Areas of Polar Curves

Theorem: Area for taked by the curve r=500 end, hence 6.08The many this

$$\frac{1}{2} \stackrel{(G)}{\longrightarrow} M$$

#### Example:

File mesors entricher heefte en e∺ sa∑ ligge 2+2e ces 9

In a data of ordinal and administration

$$x = -6\sqrt{2}$$
 on  $x = -26 \cos 3$ 



- 4

- () impressions a circle with contract (0,0) and radius  $a\sqrt{a}$
- (in propresents allows between conducts, DX with confineration D and read B > 0

 $T\in p_0$  by  $g\in S$  , we define G be the G and G by then G and G G in G G G

$$\sigma/\overline{2} = 2 \cos \theta \sin \theta \cos \theta + \frac{1}{32}$$

$$\Phi = \Phi V$$

$$= a \frac{1}{2} \int_{0}^{\pi/2} f^{\pi/2} = a b_{\mu} \exp \left( \frac{1}{2} - \frac{1}{2} \int_{\pi/2}^{\pi/2} f^{\mu} \partial \rho_{\mu} \log \rho \right) d\rho$$

$$= \int_{0}^{\infty} \left[ A \sqrt{2} \right]^{2} \operatorname{cdt} + \int_{\infty}^{\infty} \left[ C A \cos \theta \right] \left[ C A$$

$$= |2\pi^2 \, H_0^{SM} \, , \, 4a^2 \! \int_{\pi_0}^{\pi_0^2 + 1 \, \cos 2\theta} \, d\theta$$

$$= \| 2a^2(x)4 - 3(a)2a^2(x) + \frac{a(x)26}{2} \frac{1}{a(x)}$$

$$= \frac{|\tau|^{2}}{2} \left[ \frac{2|\tau^{2}|}{2} \left( \frac{1}{2} - \frac{1}{2} - \frac{1}{2} \right) - 4^{2} \left( \tau + 1 \right) \right]$$



# 2.12.4 Derivative of arc Length d

**Theorem:** So the purple 
$$y = f(x)$$
, the line  $\frac{\partial y}{\partial x} = \frac{1}{\sqrt{1 + (x^2)^2}}$ 

 $\textbf{Proof:} = f(x,y), f(x+\delta x,y+\delta y) \text{ on } (x) \text{ in ignormal proof on the pure } \delta S \text{ in pure bolded.} \text{ Duranticles } f(x) \text{ in the proof of  75 - 3 - 300 - 34

Draw st, CM Later the alcohologic Will SM.

To other than 8H 29C.

$$p \nabla_{\alpha} = 10 / q + 90 / p$$

$$\delta \phi' = 5 \phi' + \delta \phi''$$

$$c = \frac{\left( \frac{\delta m^2}{\delta \sigma} \right)^2}{\left( \frac{\delta \sigma}{\delta \sigma} \right)^2} = \left( 1 \right) \left( \frac{\delta \rho}{\delta \sigma} \right)^2 .$$

$$C = \begin{bmatrix} \frac{35^2}{3\pi} & \frac{75\pi}{3\pi} \frac{5\pi^2}{3\pi} & -\frac{18\pi^2}{3\pi} \end{bmatrix} + \begin{bmatrix} \frac{3\pi}{3\pi} \end{bmatrix}^2$$

 $idk \, N_{\mathcal{C}} = m \, (k \times k \, \Omega \rightarrow \, \Omega) \, (k \in \mathcal{C}_{\mathcal{C}} = \, U) \, .$ 

$$\left[\frac{d\hat{z}}{dx}\right]^{\alpha} = \left[\left[+\left(\frac{\partial y}{\partial x}\right)\right]\right]$$

 $\frac{1}{n} = \frac{3}{6} \left( \frac{3}{n} \right) = \frac{3}{6} \left( \frac{3}{n} \right)$   $\left[ \text{Since } \left( \frac{1}{n} \right) \frac{3}{6} \right] = 1$ 

I supercosts will result Tigues applied,  $\sigma_{ij}(x)$  is applied

The way 
$$\frac{ds}{ds} = \sqrt{1 + \left(\frac{3p^2}{2s}\right)}$$
 sking costopic gribolom remake  $g$ 

**Car.** 1. If the equation of the currently all life impli-

$$\frac{\partial \hat{r}}{\partial y} = \sqrt{\left[1 \left(\frac{2\sqrt{x}}{\sqrt{x}}\right)^2\right]}$$

Cost 2. If the  $_{1}$  value of the convention parametrization is a  $(h,h)_{1}=\{0,0\}$  and

$$\frac{\partial S}{\partial t} = \frac{\partial S}{\partial t} \cdot \frac{\partial u}{\partial t} - \sqrt{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \sqrt{1 + \left[ \frac{\partial y}{\partial u} \right]^2 + \left[ \frac{\partial y}{\partial u} \right]^2 + \left[ \frac{\partial y}{\partial u} \cdot \frac{\partial u}{\partial t} \right]^2}$$

$$= \frac{\partial S}{\partial t} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial t} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial u} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial u} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial u} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial u} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial u} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial u} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial u} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

$$= \frac{\partial S}{\partial u} = -\frac{1}{1 + \left[ \frac{\partial y}{\partial u} \right]^2 - \left[ \frac{\partial y}{\partial u} \right]^2}{1 + \left[ \frac{\partial y}{\partial u} \right]^2}$$

#### 2.12.5 Lengths of Carves

**Theorem:** Tieller guidate or promitte outriony. S(r) be well the points where r=a and a=a is

$$s = \int_{\Omega_0^0}^{0.1} \frac{1}{10^{1/3}} \frac{dy^{3/2}}{dy} dx.$$

The length of the onlicit in the gives a play between the points where  $g = g \cos g$  , where  $g = g \cos g$ 

$$\int_{-\alpha_{1}}^{\alpha_{1}} \frac{1}{1+\left(\frac{1}{1+\alpha_{2}}\right)^{\alpha_{2}}} \left| \alpha_{2} \right|$$

The length of the argument to curve z=K(t,v) . By delivery, the configuration of z and z -  $x_0$  as

$$\left[\int_{t_{1}^{\infty}\left(1+t_{2}^{\infty}\left(t_{1}^{\infty}\right)\right)}^{t_{2}^{\infty}\left(1+t_{2}^{\infty}\left(t_{2}^{\infty}\right)\right)}dt\right]^{2}dt$$

 $\omega(a,y)$  of the transfer curve z=0.00 , so we also points where b=0 and b=0

$$\frac{d_{1}}{d_{2}}\left[1+\left\lfloor\frac{d_{2}}{2}\right\rfloor\right]^{\frac{1}{2}}$$

#### Example:

Find the engine  $(-\infty)$  is a "the parabolal," +4 aymest-one from the vertex to energy the first like that replies.

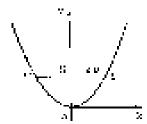
#### Splution:

incological design of an estimate of the plus resulting a little (A.V. - Claric M.V.) — Police construction in Equation

$$p_{ij}(y) = y - 2\sqrt{4\pi}$$

$$36.1971 \cdot \frac{\partial V}{\partial x} = \frac{1}{46} \Delta x = \frac{1}{26}$$

$$\label{eq:continuous} \Delta = -\Delta \cos \Delta E = \int_{-2\pi}^{2\pi} \int_{0}^{2\pi} d\tau \left[ \frac{\partial v}{\partial x} \partial^{2} \right] dx = \int_{-2\pi}^{2\pi} \int_{0}^{2\pi} \frac{\int_{0}^{2\pi} dx}{\int_{0}^{2\pi} dx} dx = 0$$



$$= \frac{1}{2\pi} \int_{0}^{2\pi} \sqrt{|(2\pi)^{2} - \hat{\beta}|} (2\pi) = \frac{1}{2\pi} \frac{\log \frac{(2\pi)^{2} + n^{2}}{\pi} + \frac{(2\pi)}{2} \log n^{2}}{\pi} + \frac{(2\pi)}{2} \log n^{2} + \frac{n^{2}}{2} \log n^{2$$

$$= \frac{2 \sqrt{12 \sigma_i^2}}{2 \sqrt{12 \sigma_i^2}} \frac{1}{16 \pi^2 (81)^3 (14)}$$

1. L

$$= 2 \left[ \sqrt{2 + \sin^2 t} + \log \sqrt{2} + \exp(t + \sqrt{2} t) \right] \qquad \text{some in table } \sqrt{t + \sqrt{2} t} = 0$$

# 2.12.6 Volumes of Revolution

1. Revolution about exacts: For estance of the soft generalization is a fact of the soft belief to which is a data of the creat belief to which is a (x,y) for a constant (x,y) for (x,y) to the contract of (x,y) is a factor of the (x,y) derivation in a ordinal (x,y) and (x,y) is (x,y) for (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of the contract of (x,y) and (x,y) is a factor of (x,y) and (x,y) is a factor of (x,y) and (x,y) is a factor of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x,y) in the contract of (x,y) is a factor of (x,y) in the contract of (x

$$\frac{1}{2} \left[ -\frac{2 \int_{0}^{1} \frac{1}{2} \frac{d^{2} d^{2} - 2 \sqrt{2} \sqrt{2}}{1 - 2 \sqrt{2} \sqrt{2} \sqrt{2}} - 4 \right] }{-\frac{1}{2} \frac{1}{2} \sqrt{2} \sqrt{2}} = 4 \times 2$$

## Parangla:

 $(p_{\mathcal{F}})_{\mathcal{F}} \mapsto (p_{\mathcal{F}} + p_{\mathcal{F}}) = (p_{\mathcal{F}$ 

#### Solucion:

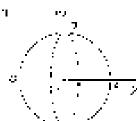
controls through the general at HW first conduction of the section of 4.9% of factors  $\rho$  about the factor (4.19 above).

. If Fig. (24.2), we also seen to minor in  $\mathcal{A}$  we have ground constraint in a single ABC  $\mathbb{N}$ 

An interplace sphere = 2064 and old the solid generalization by the resolution.
 An interplace of the property (IAA).

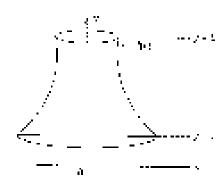
$$= 2 \int_{0}^{\pi} \pi y^{2} dx - 2 \pi \int_{0}^{\pi} (x^{2} + x^{2}) dx.$$

$$= \left| 2 \cos \beta - \frac{x^2}{3} \right| = 2 \pi |x^3 - \frac{x^2}{3}| + 7 - 1 \left| \frac{4}{3} \pi y^3 \right|$$



2. Revolution whout the grants. In blanking eggs, and year order of the line, it is use use that the year mental ingression of a transfer of the grant of the

The three energy 
$$y = g_{y,y} = f(g) \frac{1}{2} \frac{1}{2} \exp(igg)$$



# **Example:**

Enterthe volume of the consequence word formed by the respection about the victor, in the participate of the consequence of th

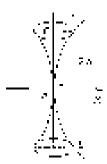
#### Salution:

В учироваров в компъл

O(A) with square and the Hardenia of the lens mattern  $\mathbb{F}_{\mathcal{F}}$  (i.e., and  $\mathbb{F}_{\mathcal{F}}$  ) which is the Hardenian of the Hardenian  $\mathbb{F}_{\mathcal{F}}$ 

$$= 2 \frac{189}{4} m^2 dy - 2 \sqrt{\frac{99}{4} \frac{2 \beta^2}{139^2}} dy$$

$$=\frac{\pi}{8a^{2}(\frac{a^{2}}{2})}\frac{a}{a}=\frac{\pi}{46a^{2}}(3)a^{2}=\beta_{1}=\frac{4\pi a^{2}}{6}.$$



# 2.13 Multiple Integrals and Their Applications

 $L = \mathcal{B}(\omega) \vdash (\log \log \omega)$ 

- z Oficeas de ele chapagolori
- Double disquest loggreport notes.
- 1 илися опи са «Прудчене дилуец»

a i kapumopak

# 2.73.1 Double integrals

the defining the part of  $\phi(x)$  and the results of the set of

 $(\delta_{1},(\delta_{2},+\beta_{3}))\delta_{2}=\cdots=\delta_{r}(\delta_{r+1})$ 

s with s and complete enginesis.  $S_{s}$  is torrestrigent Approximated Sustain the particles of the state.

For size of under to pictine to epercomparations yields a later of contributions got the  $x_{i}$  . In this case, we have the  $x_{i}$  and  $x_{i}$  are some formal sum.

$$g(x_1,y_1) \delta(x_1 + x_2,y_3) \delta(x_1 + \dots + x_n,y_n) \delta(x_n + x_n) \sum_{i=1}^n f_i(x_i,x_i) \delta(x_i^2)$$

 $\label{eq:constraint} for the constraint problem of substitution and the constraint of the constrain$ 

$$\lim_{n \to \infty} \gamma_{n-1} \hat{\gamma}_n(n-n-1) \sum_{i=1,\dots,n-1 \atop i \neq i} n_{(i,i)} \gamma_{n+1}(i). \tag{1}$$

Tiger filigent on upto integrate you diese france 8 in were nevel editione is final of standie, a sea used them. Il generatino die noother netther ay grant stang octube noothe by a use suit-6 of Silve used edition.

For expression for the expression set of a consist of  $\int_{-\infty}^{\infty} \hat{q}(z,y) dz dz$  the expression of as independent.

$$f_{i} = \prod_{j=1}^{N} \prod_{j=1}^{N} f_{i,j,j}^{(N)} (\overline{g_{i,j}}) dx$$

where integrally is ranked for floring to the cute. Here (ib)

Fig. (a) below this lates that a correct Para  $s E(\omega) \in \mathbb{C} \mathbb{D}$  and the two curves of this collection are  $u_0 = v_0 u_0$  and  $v_0 = 0$  (if  $u_0 \in \mathbb{C} \mathbb{D}$  is a vertical support with  $u_0 \in \mathbb{C}$ 

Then the strict recognizing a mady in the provided the integral knowledge of code of the knowledge for the cuter recognized began to a second of the xid following edge for the XXX to differ the CV to differ the CV to differ the CV to differ the CV to differ the XXX to differ the XX

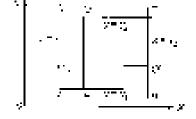
This flavored required integration of the cross-ASAC.

2. Of on  $x_0$  -, aronunctions of year  $(y_0,y_0)$  a portion  $(y_0,y_0) \times 0$  a integrated  $(y_0,y_0)$  we define where with notice for  $(y_0,y_0)$  and it is established approximate the property of a subspection with between the limit  $(y_0,y_0)$  is

$$\mathcal{I}_{t} = \int_{t_{t}}^{t_{t}} \frac{dt}{dt} dt \frac{\sqrt{(2\pi)}}{2} dk \text{ which is gothern a key it is proper to$$

19,451.

Here A(t) and A(t) are the number  $t=t_1(t)$  and  $t_2=t_1(t)$  in A(t) . Figure  $t=t_1(t)$  in A(t)



Then inserted again the desirable in  $\pm g$  at one along one edge of the  $\pm nig$  from the O which in the CVI restriction  $\pm 0$  and  $\pm 0$  and  $\pm 0$  are  $\pm 0$  and  $\pm 0$  and  $\pm 0$ .

That for  $\epsilon$  is the  $\epsilon$  grand mag after a thinking  $\{2, p_{0}\}$ 

- $\delta_{\rm c}$  (MW) and leave a formation above is all engine of larger and subspace angle A6000 (Fig.)
  - ). Approximation of the management and the shoet them will set  $\theta$
  - $0.45\,00\,\rm km (m) \approx 40\,\rm kg$  , to horizontal of  $\rho / 2.65\,\rm km J$  , and do not seek to 0.05

Lord cost (  $x_2^2 + z_2^2$  , that to posses it is not this administrative will ensemble the first allowed by a series of the series.

#### En armyp le :

$$E_{\rm eff}(z) = \log \left( \frac{d_{\rm coll}^2}{d_{\rm coll}^2} \frac{1}{d_{\rm coll}^2}$$

# Salutton:

$$I = \frac{1}{4\pi} i \frac{dx_{100}}{dx_{100}} \left[ x^2 - xy^2 \right] (2x - \int_{0}^{2\pi} x^2 y + y) \frac{y^2}{2\pi} \frac{dx}{dx}$$

$$= \frac{2}{4\pi} x^2 x - 1 - \frac{x^2}{2} \left[ 2x - \int_{0}^{2\pi} x^2 y - \frac{x^2}{2} \right] dx - \left[ \frac{x^2}{2} + \frac{x^2}{2x} \right]$$

$$= \frac{x^2}{2\pi} - \frac{3^2}{2\pi} \pm 2\pi 2500 + 64$$

# 2.13-2 Change of order of Integration

Accelled most of the still strict of any action of the strict of the st

happy it is a contrast to the other contrast to and which of a couple magnetic ratio of a section makes the expenses the section of the section f(x) and f(x) is a section of f(x) and f(x)

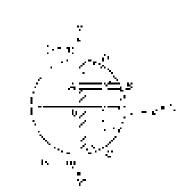
#### Fremple: 1

Эны **ую**ста а солой индикция, поделендары

$$t = \inf_{t \in \mathcal{A}} \int_{0}^{t} \frac{dt}{t} e^{tt} e^{tt} dt dt dt dt$$

#### Solution:

The Hilbert gray carrier AP is a y=0 to  $x=\sqrt{y^2+y^2}$  (conceptoring this gray by Fig. 19) as the above up for x=1 and y=2 (if y=y) as the above field gray AP is a Carrier gray AP is a Carrier gray AP in a Carrier gray AP in a Carrier gray AP is a Carrier gray AP in a Carrier gray AP in a Carrier gray AP is a Carrier gray AP in a Carrier gray AP in a Carrier gray AP in a Carrier gray AP is a Carrier gray AP in a Carrie



 $\Pi$  is the asymptotic to the gradient signs

$$I = \int_{-\infty}^{\infty} \int_{0}^{\sqrt{2\pi}} e^{i\hat{x}} dx \ y(i\Re n) dx$$

The order of integration particle intergene in worlds integrate with respect to a sample of  $\frac{1}{2} \log p = \frac{1}{2} \log p = \frac{1}{2$ 

$$I = \int_0^{\infty} 2 x^2 \frac{dx^2}{dx^2} \frac{\overline{x_2}}{1+1} f(x) f(x)$$

æ

$$= \int_{-\pi}^{\pi} \int_{-\pi/2^{-1}/2^{-1}}^{\sqrt{(n^2+n^2)^2}} \partial_{n} f_n \sqrt{n} dy \, dx$$

#### Example 2: 2

. Since  $p_{ij} \in \{p_{ij}\}$  is the interpolation of the  $\frac{1-p_{ij}}{p_{ij}}$  , which is the constraint the  $p_{ij}$  for

#### Solution:

Here into irregree on x first with y a or y in remove step (Q) which extends from Control a partition x = 1 for x > 1 for a state of the time x = 0 for x > 1 for x > 1 for a state of the curvature x is the  $Q \in Q$  for a control of Y in Fig. (a).



Tin change a harmon of the grande, wo thoughts with a delegan of the state of participation or executives (i.e. state).

grecegia. CAS inc. (Ad onto property a 40 gr., 1), inc. the currented via igle 240 and the dwarpts. 450

For the region 2nC , with two times of orders are  $10^{\circ}0 = 0$ , the  $1\sqrt{g}$  and those  $10^{\circ}0 = 0$  to g = 1, as the particle and the legion  $10^{\circ}0$  and the legion  $10^{\circ}0$  and the legion  $10^{\circ}0$  and  $10^{\circ}0$  and  $10^{\circ}0$  are  $10^{\circ}0$  and  $10^{\circ}0$  and  $10^{\circ}0$  and  $10^{\circ}0$  and  $10^{\circ}0$  are  $10^{\circ}0$  and  $10^{\circ}0$  and  $10^{\circ}0$  are  $10^{\circ}0$  and  $10^{\circ}0$  and  $10^{\circ}0$  are  $10^{\circ}0$  and  $10^{\circ}0$  are  $10^{\circ}0$  and  $10^{\circ}0$  and

$$r = -\int_0^T dy \frac{dy}{dx} dy dx$$

From granded the epite (in equation to a form x=0 ) as  $x^0=y$  and  $\pm csetting equation by <math>x_0=0$ ,  $y_0=0$ ,  $y_0=0$ , and  $y_0=0$  is the first of the region dual is

$$\begin{split} I_{n} &= -\int_{-\pi}^{\pi} dy \int_{0}^{2\pi} xy \, dx \\ &= -\int_{0}^{\pi} dy \int_{0}^{2\pi} xy \, dx + \int_{0}^{\pi} dy \int_{0}^{2\pi/3} xy \, dx \\ &= -\int_{0}^{\pi} dy \left| \frac{x^{2}}{2} |v|_{L}^{-\frac{1}{2}} + \int_{0}^{\pi} dy \left| \frac{y^{2}}{2} |v|_{L}^{-\frac{1}{2} + \kappa} \right| \\ &= -\frac{1}{2} \int_{0}^{\pi} (x^{2})^{\frac{1}{2}} \left( -\frac{1}{2} \int_{0}^{\pi} (y^{2}) \cdot v(y^{2}) \, dy \right) = \frac{\pi}{6} + \frac{5}{22} = \frac{3}{3} \end{split}$$

# 2.13.3 Double Integrals in Polar Coordinates

For some state 
$$\int_{-1}^{\frac{1}{2}} S^{2}(0)ds$$
 and some state of  $s=s$  , the edges in the  $s=s$ 

 $2000-\gamma_0 k_{\rm exp}$  in the means and the resoluting correspond to integral 4.00 ). The means ,  $c_0$  is attained to the discrete  $C_0$  in the means ,  $c_0$  is attained to the discrete  $C_0$  , and consistently

There are 200 for the process of a 200 and  $r_i \in L^2(g)$  in reced to the 1700 for  $f_i \in L^2(g)$  and  $f_i \in L^2(g)$ 

 $\lim_{t\to\infty}\frac{1}{t}(0,0) \leq n \text{ is sets that the integral is along the part who is with a continuous c$ 



Husicales Inequirees, repended and

The the of extragal or integration of the area ABB The inverse integration may be divergely with expressional gas in the risks

#### Etampie:

Calculate 
$$\prod_{i=1}^n d^2 x^i$$
 distance that they is those parameters are as  $x_i \in \mathcal{S}(d,x)$  and  $x_i \in \mathcal{S}(d,x)$ 

#### :Jutton

Greatures 
$$x = 2 \cos \theta$$
 ; and  $x = 2 \cos \theta$ 

are shown in Figure below. The shaper prescriptions of his side  $\phi_0$  and integration, if we note that we have the interest of the  $\phi_0 = 2$  and into  $\phi_0 = 4$  and  $\phi_0 = 1$  is  $\phi_0 = 0$  when a left on U various from the  $\phi_0$  Thus the possible and  $\phi_0 = 1$  is  $\phi_0 = 1$ .

$$\begin{aligned} & \mathcal{L} = \int_{\mathbb{R}^{3}} d\theta \frac{d^{3} - dt}{dt} d^{3} dt \\ &= \int_{\mathbb{R}^{3}} d\theta \frac{d^{3} - dt}{dt} \\ &= \frac{1}{3} \int_{\mathbb{R}^{3}} d\theta \frac{d^{3} - dt}{dt} \\ &= \frac{1}{3} \int_{\mathbb{R}^{3}} d\theta \frac{d^{3} - dt}{dt} \\ &= \frac{1}{3} \int_{\mathbb{R}^{3}} d\theta \frac{d^{3} - dt}{dt} dt \\ &= \frac{1}{3} \int_{\mathbb{R}^{3}} d\theta \frac{d^{3} - dt}{dt} dt dt \end{aligned}$$

uong aminin Ny ngga

$$\lim_{t\to 0} \sin \theta \log u = \int_0^{\pi/2} \cos t^2 \theta \sin t - \frac{\sin - \frac{1}{2} (p^2 - 20 \cos t)}{\sin \frac{1}{2} (p^2 - 20 \cos t)} dt - \frac{\sin t}{2} g_{pp}$$

 $\Delta f \cap A = 4$ 

le A E Court and A Court and A court and A see

$$\frac{1}{\pi} \left[ d\alpha \left( p \beta \right) \right] = \frac{\left( \frac{1}{2} + \frac{1}{2} \right)}{\left( \frac{1}{2} + \frac{1}{2} \right)} \left( \frac{d\beta}{d\beta} \right).$$

Section 
$$S(x) \mapsto f(x) \oplus g(x), \qquad f(x) \mapsto g(x) \frac{g(x)}{x} \frac{f(x)}{g(x)} \frac{g(x)}{g(x)} \frac{g$$

# 2.13.4 Area Endlosed by Plane Curves

The production for all the probability of the section of the production of the section of the section of the section of the probability discount in the section of the sec

$$\int \frac{d^{2} g(x)}{(1-g(x))} dx \, dy$$



# Example:

Quiv. It is also between the case of  $y = 2 \cos \theta + 4 \cos \frac{16}{2} \sin \theta$ 

#### **Salution**

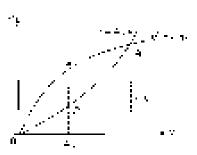
The equality  $s(y) = (x_0 + x_0)e^{-ix^2} + A_0 e^{-ix}$  is even 1.9). The parameters is sufficient  $A(x_0, x_0)e^{-ix}$  and  $A(x_0, x_0)e^{-ix}$  is a sufficient parameter  $A(x_0, x_0)e^{-ix}$ .

$$= \int_{0}^{\infty} \frac{1-2x^{2}}{2x^{2}} dy dy$$

$$= \int_{0}^{\infty} \frac{1-x^{2}}{2x^{2}} dx dx + x^{2} dx dx$$

$$= \left[ 2\sqrt{x} - \frac{1}{3} \right]^{2/2} - \frac{1-x^{2}}{4x^{2}} \int_{0}^{x} dx$$

$$= \frac{22}{2} x^{2} + \frac{1}{3} x^{2} + \frac{19}{2} x^{2}$$



# 2,13.5 Triple integrals

Consider with respect to  $(-1)^{-1}$  in standard ways, which is  $F(G) = (0)^{-1}$  to the standard respective  $F(G) = (0)^{-1}$  in the constant  $F(G) = (0)^{-1}$  is a constant  $F(G) = (0)^{-1}$  in the constant

$$\sum_{i=1}^{m} \ell(x_i, \ldots, x_i) \delta \ell(x_i)$$

The hold with the following r is the  $W_i$  — Six at least top be made of  $V_i$  is a constitution of  $P_i$ 

$$\prod \|\tilde{\rho}^{(i)}\|_{L^{\infty}} \geq 2100^{i}$$

The introduction of evaluation, it can be such that i = 0 for an arm of exposure in Eq.(

$$\int_{|x|=\sqrt{2}}^{|y|+\sqrt{2}} \tilde{\eta}(x,y) dx \, dy \, dx$$

e, lega a conclared a guerre é nem a nombre functions du la germétres concluite un luir de la la viente y Bron The integral siene named as la lacati

Figure, is the integrated on the weather times,  $z_i$  and  $z_j$  been by a anti-proof. The result of a contract of the contrac

7· J:

$$f = \int_{0}^{\infty} \overline{\int_{0}^{\infty} \frac{|x|^{2}}{\left|\frac{1}{1+|x|^{2}}\right|^{2}}} \frac{\sqrt{\frac{1}{n_{0} r_{0} z \cos z}} \exp(z)}$$

And a final transformations be read out that the mass most rectangly to the cotton as it consides.

pregade with a grando may be different for different types of Italia.

### Example: \

$$\operatorname{polium}_{\mathcal{D}} \int_{0}^{1} \int_{0}^{\infty} \int_{\mathbb{R}^{N}} |(x + y - x)|^{2\pi} \, \partial y \, dx \, .$$

anluteon;

To equation fluctuated whereing was tive a good, was agreed

$$\begin{aligned} & \left[ -\frac{1}{2} \int_{-1}^{2} \left[ a x + \frac{x^{2}}{2} - a y \right]_{0}^{2} dx dx \\ & = \int_{0}^{2} \int_{0}^{2} \left[ (a + F)(2\pi x) - \frac{1}{2} dx \right] dx dx = 0 \right] - \frac{2}{2} dx dx - \frac{1}{2} \left[ a dx - \frac{1}{2} \right] dx dx \\ & = 2 \int_{0}^{2} \left[ \frac{x^{2}}{2} + \frac{x^{2}}{2} - \frac{2x^{2}}{2} \right] dx - 2 \left[ \frac{x^{2}}{2} \right] = 0 \end{aligned}$$

Coample 2

Usefueld 
$$\int_{0.00}^{1+(j-j)^2} \frac{z_j \pi \sqrt{z_j/2}}{z_j} z_j \pi d\sigma dy d\pi.$$

Saluulon:

$$\begin{aligned} & = \frac{1}{2} \int_{0}^{\sqrt{2}} \left[ \int_{0}^{\sqrt{2} - x^{2}} x^{2} \int_{0}^{\sqrt{2} - x^$$

### 2.14 Vectors

# 2.14.1 Introduction

In a 20 per sensivity vectors and containers one in 3 space and control to a months is equal to their vector in the control execution of the control in the angelong and their vector in the control executions are the angelong and their interest that a control execution of the control execution.

We instead on the desired and considers with some an Second Vestor different additional mediation according to the following considers of the second c

Wo find b discrete three only participant partial is sty integrated converts related to seath form well of IH(a) has by the quantum bivergence, and our thripped through a investing these consequence in section diagratums are  $a \in A$ .

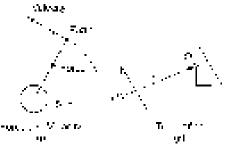
# 2.54.2 Basic Definitions

gives, it is a partity to be only mode of counts magnitude with a treather true of companions of gives  $\mu$  in a segment for notation altered a used, it at the instance the the solution of the counts of Equipment We counts we give by the instantial later known at the counts we counts we give by the instantial later known at the counts of the counts we count by the instantial later known at the counts of t

A vector (growthest is tall, when it is that point and a set conducted the paint  $F_{ij}$  invariant halpens to transpose two details as the point of the restore is the sign of position the contraction and the set of G is a set of the land the set of G is a set of the land the set of G.

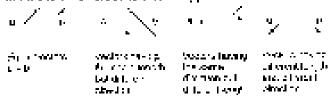
The larget (all magnitudes of a vector a(l+1) is the letter, is also collect the name for Euclidean (e.g., b(a)) of a+a is defined above.

A with monthly f(x) is called a unit f(x) f(x)



# 2.14.3 Equality of Vectors

By ordinates, we decrease of the second of x, without x = 5, it is expressed the semiclocal that the content of x and x is the following constant of x and x is the following content of x in x is the following content of x in x in x is the following content of x in x is the following content of x in x in x in x is the following content of x in x i



Winds to

#### 2,14,4 Companents of a Voctor

We have an uniterioral continue system in quality than a cost of pulsipped the experimental parameters are used in the point operations where the inflation continue continue of  $\mathcal{C}_{\mathcal{A},\mathcal{A},\mathcal{A}}$  is the first operation of the first point of the experimental point  $\mathcal{C}_{\mathcal{A},\mathcal{A},\mathcal{A}}$  in affine numbers

**Length in Terms of Components:** By definition, the length (a, b) as kerner A is the distance between B and B appropriate A and A is the distance between B and B are B and B is the B is the B and B is the B is the B and B is the 
$$2x - \|\mathbf{a} - \sqrt{\mathbf{a}}^2 - \mathbf{a}^2 - \mathbf{a}^2\right)$$

$$2x - \|\mathbf{a} - \sqrt{\mathbf{a}}^2 - \mathbf{a}^2 - \mathbf{a}^2\right)$$

$$3x - \mathbf{a}^2$$

$$4x - \mathbf{a$$

#### trample:

Complete substance or gland to waste.

to visit v with much point  $P_v(u,0,2)$  and u much point  $Q_v(\mathfrak{X},\dots,\mathfrak{X})$  has the equation  $H_v(x)$  $a_i = 0$  4 - 2  $a_i$  - 1 - 3  $a_i$  +  $a_i = 2$  8 - 6.

#### Solution:

$$\mathcal{R} \simeq [2, -1, \, \mathbf{J}].$$

$$|\Phi| \leq \sqrt{2^{n}} (1 + 6^{n} + 6^{n}) + \sqrt{n}$$

two consequents  $\hat{x}_i$  of i and point of  $a_i$  be by experting communication  $(x_i + x_i)$ 

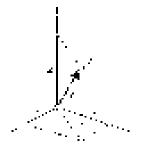
We chapter for  $\phi$  igit (fig. there as the initial color of  $x = +\infty$  regularly terminal color  $\omega$ 

 $z^2$  . If Ubital inside a final value the components of  $z_i$  for j in this section i,j , j,j . This supposes where the collection path and the specietary groups, caroliness.

#### 2.14.5 Position Vector

 $\delta$  Code significantly also system belong (likely, the passition accompana point)  $\mathcal{E}(0, \pi, Z) \otimes \log 200$  with the could with the bight (0, 0, 1) as the (i, 0) point 803.486 and in minal conditions  $1.13 \pm 1.16$   $\pm 1.1$ 

for the moves have not place a vector at offering a contributable management  $\Im$  Temporates as with algebraic pathons by the same  $\omega_{\rm COR}$  as the the convergence of the very chemical constraint. This provides



Part of Malicon, particularly in

# 2.14.5.3Vectors as Ordered Triples of Real Numbers

Theorem: Alfred Coffice is a spirate ovacet congretation and a second great proper octomination to smooth tighted corresponding companies of the excellence contents of provides in times s(a,a,a) here. corresponds one stay one vector  $\mathbf{s} = [s_0, s_0, s_0]$  is partial and the discrete Mathieu,  $\mathbf{0}$  . Operative most in  $[s_0, s_0]$ vacker of, which has engited a direction.

However, we star exception a=a is a(q) with a to a at times equations  $a_1=a$  ,  $a_2=a_2$ ,  $a_3=a_3$  for the מריכה סכן דינטי

Avaidee it still om dur liggeomatifist in effiction of volvers as a roys, on intspirit vers eller en teligebraich with particular that for the Theorem. We can notice starting from the latter of the proof of the proof of the starting starting of the starting starting of the starting stthat, it are acceptable to a "geometric" and in private larger words, are consistent

#### 2.74.6 Vector Addition, Scalar Multiplication

applications, where  $u_0$  respectively be native  $u_0$  in configuration profiled  $y_0$  by  $u_0$  and  $u_0$   $u_0$ 제품(Newson abouts), cros 本土 Yild (中国)

#### 2.14-6.1 Dell'inittion: 1

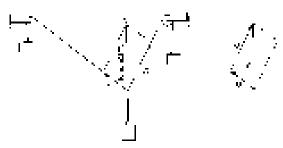
**Addition of Mecture:**  $\Pi$  with  $\mathbf{a} \in \mathcal{B}$  of the Mack Matter  $\mathbf{a} = [a \mid b_{1}, b_{2}] + (b \mid b) = (b_{1}, b_{2}, b_{3})$  where  $\mathbf{a} \in \mathcal{B}$  and  $\mathbf{a} \in \mathcal{B}$ 

$$\mathbf{e} = \hat{\mathbf{o}} = [\mathbf{c}_1 + \mathbf{b}_0, \mathbf{c}_1 + \mathbf{a}_2, \mathbf{c}] = \mathbf{c}_0$$



Certification  $\gamma$  into the second with  $\gamma_{ij}$  in  $\gamma_{ij}$  in the contrast of i , i , the terminal point of  $\gamma_{ij}$  than 

Figure grades I objectionate, the equilibrium streep to be given as  $\log w'$  for +6 calculations because the 1.67



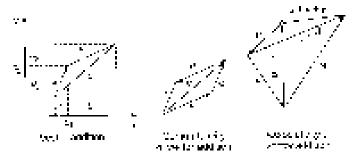
Red , said of two or in I part of the first

Figure Histories (with epister) in little in polarity, way as  $z \in \mathcal{L}$  (compare leave two conditions at  $z \in \mathbb{R}$  as something.

Herit properties of Yethoraddition of the minutes of  $\phi$  for the form of the  $\phi$  and  $\phi$  and  $\phi$ 

- is:  $n \cdot n + f_{n+M} = (confit \text{ referry})$
- (6) 410-510-6
- (x) = g = (x, x) = (1)

where  $|\psi\rangle$  is the superconfigurity be explicated from invarious professional a



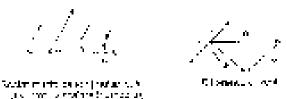
In coopering (1) above instead of  $(1) = \operatorname{weak}(n + s)$  , which region [1], where t = s will use for some and some interesting or more than the matter. Also instead of s + s we find the context and the latter t = t where t is becomes a some instance of the source of s + s and the formula t = t in the context of t = t. Thus,

#### 3.14.6.2 Definition: 2

Scalar Multiplication (Multiplication by a Number): The induction of the months in (১৮ 12), এ, জুনিল স্থাত ৪৯১ লাক্ষ্যের স্থান ভাগবিদ্যালয়ের স্থান প্রথমিক পুরোজন ব্যাহ্যালয় নিজ্ঞান্ত

$$dS = \{ca., ca., ca.\}$$

Gaptient stay flow 0. If an early flow that has be obtained by an IrVID in a Considered, the matter that Index case the Bright show a post in flow and ball of L = 0.15 and L = 0.05 both.



#### Brample:

# Vector Addition and Multiplication by Scalars.

C(0) dispersions given induced that system terms

No highers.

193 
$$|a| = -4, |b| = 1), |a| = |20, 0, |c|| |a| = c, |a| = \frac{4}{a} - \log c$$
$$2(a - 5) = -2(2 - 5)^{a} - \frac{4}{a} + 0(\frac{5}{a}) = 3 + 26$$

#### 2.14.7 Unit Vectors

Any world in the engine of s in this waster i,j and k the manipulation of special collections are the g9 of g..., 9 200 T 520 of refleet group.

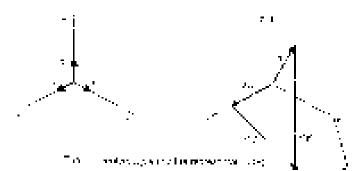
$$\hat{a} = |\hat{y}| + |\hat{y}| - 1$$
  
 $y = |\cos \theta|_{x} - \sin \theta|_{x}$ 

Abovekery and vocation happen-

# 2.14.7.1 Representation of Vectors in Terms of $j,\,j,\,$ and k

$$\hat{\boldsymbol{\beta}} = (\boldsymbol{a}, \ \boldsymbol{\beta}_{\boldsymbol{\beta}}, \ \boldsymbol{a}_{\boldsymbol{\beta}}) + \boldsymbol{a}^{2} + \boldsymbol{g}_{\boldsymbol{\beta}} + \boldsymbol{g}_{\boldsymbol{\beta}}$$

 $1.18^\circ$  egrevalistics, z ... aske the unit vectors in this was its giras, one group have of a  $C_{
m SLOS}$  on poordinate ay men



$$(=1,0,0) \quad := 0.100 \quad \text{a. } \beta \cdot \beta, \eta]$$

Here, we tight stop of the  $x \mapsto x_0 + y_1 + y_2 = 0$  and  $y_2 = y_3 + y_4 + y$ 

 $\eta \in \mathcal{U}$  we which the posterior

## Solution:

In providing the map 
$$g(g_1, g_2, g_3) = \left[ g_1 + 5 \frac{1}{9} \right],$$
 which is the following that  $g(g_1, g_3) = g(g_3, g_3)$ 

# 2.14.8 Length and Direction of Vectors

Analyze for a may stemp than  $\mathbf{x}_{2}$  and  $\mathbf{x}_{3}$  and  $\mathbf{x}_{4}$  and  $\mathbf{x}_{4}$  and  $\mathbf{x}_{5}$  and  $\mathbf{x}_{5}$  and  $\mathbf{x}_{5}$ 

$$\hat{\mathbf{a}} = \mathbf{a} \begin{bmatrix} a \\ b \end{bmatrix}_{\mathbf{a}}$$

. There is table to gift a vector and  $\frac{d}{|\xi|} \approx a \, (n)$  , vector in direction at a

#### Europie 4.

Express  $g_{ij}$  . Area is  $g_{ij}$  with an pin find direction

#### Salution:

Figure by substituting that 
$$\frac{e}{1e^{x}}=\frac{S(-\omega_{i}^{2}-\frac{3}{2})}{S}(-\frac{3}{2})$$

$$y = \left(2t + d\right) + i\delta\left(\frac{d}{2}t - \frac{d}{2}t\right)$$

$$\left\| \frac{3}{6}, \frac{1}{6}, \dots \frac{\sqrt{\frac{2}{3}}}{\sqrt{\frac{2}{3}}} \right\|_{2}^{2} = 1$$

$$\S (q_{\mathrm{loc}}) \cong_{\mathrm{loc}} \mathbb{N}$$
 is a uninvector.

#### Example 2.

 $p_{\mathcal{G}}(g_{\mathcal{G}}): p \mapsto (a_{\mathcal{G}} \cap a_{\mathcal{G}}) \otimes (a_{\mathcal{G}} \cap a_{\mathcal{G}})$ 

# Solution:

The required the force 
$$\frac{e}{(e)} = \frac{2e + 6e}{2e^2 + 6e} = \frac{4}{2e + 6e}(e - \frac{2e}{2e + 6e})$$

#### Fanmpluä.

malumity you, it is regarded in a modificance purve.

$$\varphi = \frac{\sqrt{2}}{2} \cdot \frac{1}{2} (9, 0.07.7)$$

# Schution:

Unit vector tengent to cores:

$$\mathcal{L} = \begin{bmatrix} 2 \beta^{-1} \\ 2 \end{bmatrix}_{2 \leq 1/2} = \frac{8 \sqrt{t^2}}{2} \cdot \frac{3}{2}$$

Any length with the end  $\frac{\partial}{\partial t}$  data to written as

$$|\psi| = 1/25 + 20$$
  
 $|\phi| = 3\sqrt{25} + 3^{\circ} = \sqrt{13} \text{ A}$ 

Compressed in the Gold IVIX

$$r_{0}=\frac{v_{0}}{16}=\frac{33(4.35)}{3(3.5)}=\frac{2}{\sqrt{15}}(4.\frac{3}{\sqrt{5}})$$

Hirot a spillings

$$= e^{-\frac{2}{\sqrt{10}}} \left(-\frac{3}{\sqrt{20}}\right)$$

grantly in transfer appeals the most high appeals  $\theta \neq i$  and  $\mu$ 

Unit exctor Hormal to CMPVFF

$$\varphi = \frac{2}{\sqrt{4\sigma}}, \quad \frac{3}{\sqrt{3}}.$$

 $\varphi = \frac{g}{\sqrt{18}}, \quad \frac{g}{\sqrt{18}},$  as where g in the following the product of the children was a

$$\binom{n}{n} \left( -\frac{n}{n} \right) =$$

So a vector not see that 
$$1 = \frac{2}{\sqrt{2}} J + \frac{3}{\sqrt{2}} J + \frac{3}{\sqrt{15}} J + \frac{3}{\sqrt{15}} J + \frac{2}{\sqrt{15}} J$$

Note that  $-\alpha = \frac{\partial}{\partial x} \left( -\frac{\partial}{\partial x_i} \right)$  is a witter in the claim contains for all key that in approximation  $x_i$ 

# 2.14.9 Inner Product (Not Product)

We shall now the loan in the collection of the value I at the expectation that I is a I and is supposed. Ly 94 is a sept by 3, 515.

# Definition. Inner Product (Dot Product) of Vectors

to three conjugacy distipled in the h (  $ext{sol}$  Lado, of otherwise) is known to other product of the He  $\sqrt{1} imes$ medical period of the range (see Fig. 65 own

$$x = x \cdot x + \lambda | x \cdot x \cdot x \cdot x$$

The originary wishing a consistent control to a reasured when the special convenience points can all lega-Meiric Colorest.



In some a matrix  $x = [x_0, x_0, x_0], x = [x_0, x_0], x \in \mathbb{R}$ 

$$\hat{y} = \hat{y} \cdot \hat{y} = 2.0, + 6.5_2 - 8.5_2$$

con accordant liggida.

Since the wearth fillings begins the Lord, or repolits with all by the more product. The  $\sigma_{\rm RS}$  graphs . However, and that is not to (s,s) great in matter through a quadratic field s any s and s - sAssociated by reflect of the grant A is a factor of A , B=0 . For this above the B and we can the above this subjudge to the subject  $\mathcal{O}$  was a first vector which is sufficiently become section. For this way, vectors we have a letter does the  $x_2 = 0.1$  (see = 3.2000% . This is easily develop improved.) Чата .

#### Treamm: 1 (4) rthogoga@yr.

The inner product of the productive vectors (  $\phi \rightarrow \phi$  ) and only otherwise the  $\phi \rightarrow \phi \phi +  

**Length and Angle In Terms of Inner Products** Politic on (it as given that  $\hat{\theta} = 0$  ignor  $\phi \circ g \in \mathcal{A}_{\theta}$ 

From ( ) and ( ) we obtain the Helmitiany to be on two manners using Lemma

#### Example:

The the interpret is see the lengths  $x\in [0,2,2]$  and  $x\in [0,2]$  , as well as the gradient vectors Helif you done.

# Salution:

$$\frac{3 \cdot N}{6} = \frac{7 \cdot 3 + 20 \cdot 20 + 00 + 04}{2 \cdot 12^{2} \cdot 12^{2} \cdot 12^{2} \cdot 12^{2}}$$

$$= \frac{3 \cdot N}{6} = \frac{3 \cdot 12^{2} \cdot 12^{2} \cdot 12^{2} \cdot 12^{2}}{2 \cdot 12^{2} \cdot 12^{2} \cdot 12^{2}} = \frac{3}{36}$$

$$V = \frac{1}{2} \sum_{i=1}^{n} \frac{1}{n^2} \frac{\partial^2 x}{\partial x^2} + (-1)^2 + \frac{1}{n^2} = \sqrt{n^2}$$

$$V = \frac{1}{2} \frac{\partial^2 x}{\partial x^2} + \frac{1}{2} \frac{\partial^2 x}{\partial x} + \frac{1}{2} \frac{\partial^2 x}{\partial x^2} + \frac{1}{2} \frac{\partial^2 x}{\partial x} + \frac{1}{2} \frac{\partial^$$

ina gregore de para esta de la control de la control de la composition de la control de la control de la contro Control de la 
**General Properties of Inner Products**: Form the melicitor, we substitute the inner product A as the following A and A are A are A and A are A

(a)  $\log ||a|b| = \log a \cdot b * \operatorname{Col} \cdot b$ 

(Linearization

Service Service

, 2-minetry)

ret læke 2 o

,  $\mathbb{R}_{2}$  ,  $\mathbb{Q}_{2}$  , or inferior constant

Fig. (a) a = 0 is the only  $\frac{1}{2}a = 0$ 

 $([5, 9]) \mapsto (e^{-1})([5, 2, 2])$ 

Has projectly upplied a mile somethodisc and is democrated which results in the test condition (15 (56)).

 $\lambda$  in leader (a) with  $\sigma$  in Land  $\phi_{s}$  = 1 we have

o (aróce⊭a cráb

ça sarba, e kiri

it innomials them as the following and allowed by

$$\xi = \{y_1, y_2 \ge 1, \dots \}$$

pšahvorz nograliją.

a blende th

Tria cla requalità

(Para Magram causily).

Figure 19- (8) as yours are almost called  $\alpha$  oct, somewhere  $\alpha$  is the product spaces  $\alpha$  if  $\alpha$  from the basis of parameter  $\alpha$  as

Denotation of  $a(b)=a_ab_a-a_bb_a-a_bb_b$  by  $a(x,b)=a(b)\cos a$ 

$$\varphi = \mathbb{R} + \mathbb{R}_2 + \mathbb{R}_3$$
 and  $\phi = 5.3 + \mathbb{R}_3 + \mathbb{R}_3$ 

where the first energy of the contract was seen from (3) and  $||x||^2 + 1$ , |x| + 1, |x| + 3, |x| + 1, |x| + 3, |x| + 1.

Since  $j \in \mathbb{N}$  and contagons a countered Theory is a step-induced point satisfies a light  $j \in \mathbb{N}$  with the  $j \in \mathbb{N}$  and  $j \in \mathbb{N}$  an

More

$$\Phi(A) = \{A : A : A_{p} : A_{p} : A : B_{p} : A : A : A : B_{p} \in A_{p} \}$$

using distributes properly the first review are interinred **product**s.

$$||\phi_{i}(t)||_{L^{\infty}(\mathbb{R}^{N})} = ||\phi_{i}(t)||_{L^{\infty}(\mathbb{R}^{N})} + ||\phi_{i}(t)||_{L^{\infty}(\mathbb{R}^{N})} + ||\phi_{i}(t)||_{L^{\infty}(\mathbb{R}^{N})}$$

(with smorthly to the cluster zero, we pole tike in  $\mathcal{A}(b) = A_{ij}(0,1) \mathcal{A}(b)$  ,

**Applications of inner Products:** topical applications will a challed stocked and she will a health as inglessmales.

#### Bompke

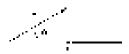
i ségrpalang galah di kalawan ngarastro abi

# Solution:

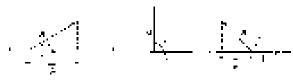
standages a code on which a constant time  $g \sim |x|^4$  et instruct, so greds under set e northé. Then the work done by g in the displacement k de le line. As

$$\mathcal{H} = \{\mathbf{q}, \mathbf{d}, \mathbf{duag} \in \mathcal{P}_{\mathbf{q}}^{\mathcal{A}}\}$$

. Also reconsiders to the formation attains the planet the deviate of the modern constraints and the end of t



**Vestor Projection:**  $\operatorname{Deg}_{\mathbb{R}^n}$  with a vestor projection of a challenge  $x\in \mathbb{R}^n$ 



$$P^{\prime} = \frac{1}{2} |\Phi| T$$

 $\sigma$  (3.50) of COTMAND and Heiler inequality of  $\phi$  is two unit vector in a median of  $\phi$ 

$$\begin{aligned} f(x, x) &= \left( \frac{a(a) f(x, x)}{b(a) f(x, x)} \right) \\ &= \left( \frac{a(a) f(x, x)}{b(a) f(x, x)} \right) = \left( \frac{a(a)}{b(a)} \right) dx \end{aligned}$$

392.95 hoof of (0.45) in the resonant contraction of the time 44.85 by resonant mechanism.

#### Example:

#### Vector projection of a consumitive vector by

Find the vector of operation of a value a ,  $a = \sqrt{(a+b)} = 2a+b$ 

#### Solution:

$$|\nabla_{\mathbf{p}}(\mathbf{x})| = \left(\frac{6 \cdot 1}{5 \cdot 5} \left[2^{2} + \frac{(3 \cdot 0 + 3)}{5 \cdot 5 + 4 \cdot 4}\right] (3 - 14) = \frac{3}{25} (2 + 15) = -\frac{5}{26} (4 + 25)$$

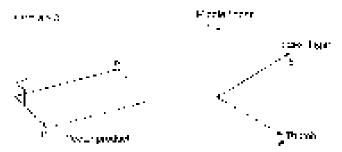
### 2-14-10Vector Product (Cross Product)

The purpoductible contact Washinks—that is merely fixed as for instance, in control or of minimum is most one product of two resource to the spectral vector. This is self-all sector except of the posterior entrol cross, product.

# Definition. Vertor product (Cross penduct)

 $\mathbf{I} \neq *ester \ \mathsf{product} \ (\mathsf{proces} \ \mathsf{product}) \Rightarrow *h(\mathsf{e}^*) \Rightarrow \mathsf{product}(\mathsf{proce} \ \mathsf{product}) \Rightarrow *h(\mathsf{e}^*) \Rightarrow \mathsf{product}(\mathsf{proce} \ \mathsf{product}) \Rightarrow \mathsf{product}(\mathsf{proce})  

 $P = A A C + |\mathbf{u}| \approx 0.007 \times 6.0000 \,\mathrm{MeV} \,\mathrm{s} \, .$  Since S from an globulanded system, with A complete A which A is A which A is A and A and A and A and A is A and A



The a d b have the same of capacity on a the control if the a three vectors is the same weeking than b a b db . Cat y d a a b a a b a b db.

# ر ده از کار در از ا

This the area of the parallelogram is Equit as over #11 at And 5 to adiabatica design is else grepagnetic #13 for the thereign of an object to reculate a variety of 5 and are 1905 of 5 for the action of 4gm increded tiple as shown in ignic 49,59.

In components,  $v = [v_0, v_1, v_2] = 3 \times \hat{D} \times \hat{D}$ 

is the individual to the gratients of the properties of indextigues. For  $\lambda = 0$  and  $\lambda =$ 

#### In terms of determinants:

$$v_1 = \begin{bmatrix} s_2 & s_1 \\ s_2 & s_2 \end{bmatrix}, \qquad v_2 = \begin{bmatrix} v_0 & s_1 \\ s_0 & b \end{bmatrix}, \qquad s_3 = \begin{bmatrix} s_1 & s_2 \\ b & b_3 \end{bmatrix}.$$

Figure  $v = (v_1, v_2, v_3, \dots, v_n) + v_n$  is the expansion of the symptoms for the manifold matrix v.

$$\label{eq:continuous} \phi(z) = \begin{vmatrix} z & z & z \\ c_1 & z^2 & z^2 \\ c_1 & b_1 & b_2 \end{vmatrix}$$

by the first  $\cos x$  (Walls this pyramotical because the line resultance  $x = e^{x}$  such talker when unborse

# 2.14.18.8 Finding a Unit Vector Perpendicular to two Glack Vectors a and b

And it we have agreen can arise the pivon vectors of the bits given by

$$r = \frac{\sin x \cdot \cos x}{\sin x \cdot \cos x} = \frac{\cosh x}{\sin x}$$

#### Example 1

When the place is the right-handed statement operations, dispersion with the 0 + 1 -coordinate system. We will be 0 + 1 -coordinate system.

#### Seletion:

#### Engine 1:

The plant vector period display at a finite x = b \* j \* b one  $b = Z - \xi r + 4\epsilon$ 

## Salution:

$$2 \times 1.$$
  $\begin{bmatrix} 1 & 1 & 8 \\ 2 & 1 & 0 \\ 2 & 2 & 2 \end{bmatrix} = 81 - 81 - 85$ 

 $\beta$  ) Riversian perceit for inhed state  $\alpha$  a

$$r_{i,j} = \frac{(2 + D)}{(2 + D)} = \frac{\frac{1}{2}(1 + D)}{2 \sqrt{2}} = \frac{1}{\sqrt{2}} (1 + y - b).$$

T на вын Min i was on an pondanci la both a and  $z_n$  incover  $\pm z = \pm \frac{1}{\sqrt{2}} \hat{b}_{n-1} + \hat{\Omega}$ 

# Esample 7.

The vectors for longic lattic carrie Alice Richeld  $(d+0)^2+2^4$  and  $\phi+2^4+4$  , by respectively. First

, or the paralleleg and have  $J_{\rm eff} \lesssim g_{\rm eff} \approx d \cos k s$  accepted to the

# Salutiona

$$\langle 0 \otimes a \circ \overline{(g)} \rangle = \langle d \circ (b' \circ b') \circ (b') \otimes (g) \otimes (g) = g \circ (g') \circ (g_{1} \circ \dots \circ g_{n})$$

$$= (10 - 2)\hat{k} + (-5 - 4)\hat{k} + (0 + 2)\hat{k} + (12\hat{k} + 2\hat{k} + 2\hat{k$$

$$\Rightarrow - \left[ s \cdot t \right] = \frac{s_{12} s_{113} \sqrt{s_{12}}}{s_{12} s_{13}} = \frac{s_{12} s_{13}}{s_{12} s_{13}} = \frac{s_{12} s_{13}}{s_{12}}$$

$$(2r/2) \cos (2r/4) \log = \frac{1}{2} \left| \hat{g} \times g \right| = \frac{\pi}{2} (\log 1/\log q) , \text{ if } |g| = \frac{6}{3} |G|^{\frac{1}{2}} |M|_{10} (|g|).$$

(c) Area of this figure from Lemma ( by  $\overline{BZ}$  ) and  $\overline{BZ}$  we we determine these

#### Example.4.

 $A^{(1)}$  ) where  $A^{(1)}$  is the area of the diagraph with so these A(1,1) (i), B(2,3) B(4,4) G(1,2,3)Sálutiun:

Low-distributions  $\overline{\mathcal{A}}$  and  $\overline{\mathcal{A}}$  represents the special value  $\mathcal{A}\mathcal{C}$  on a fig. , then

$$\begin{aligned} \delta &= 4\mathbf{P} - \mathbf{P} \nabla \cdot \mathbf{r} (\mathbf{0} + \mathbf{P} \nabla \cdot \mathbf{r}') \mathbf{r} \\ &= (2^{2} \cdot \mathbf{1})^{2} \cdot \mathbf{R} \hat{\mathbf{r}} \cdot \mathbf{r}' \cdot \hat{\mathbf{r}} + \mathbf{R} \hat{\mathbf{r}} \\ &= (2^{2} \cdot \mathbf{1})^{2} \cdot \mathbf{R} \mathbf{r} \\ &= (2^{2} \cdot \mathbf{1})^{2} \cdot \mathbf{R} \mathbf{r} \\ \delta &= (3^{2} \cdot \mathbf{1})^{2} \cdot \mathbf{R} \mathbf{r} \cdot \mathbf{r} + \mathbf{R} \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} + \mathbf{R} \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} + \mathbf{R} \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} + \mathbf{R} \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} \cdot \mathbf{r} + \mathbf{R} \mathbf{r} \cdot \mathbf{r}$$

$$\frac{7}{9} = \frac{7}{2} \frac{6}{9} = \frac{7}{42} \frac{7}{2} \frac{25}{9} \frac{69}{10} \frac{105}{10} \frac{64}{10} \frac{106}{10}$$

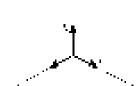
$$\frac{6}{9} = \frac{1}{9} \frac{1}{9} \frac{1}{9} \frac{106}{10} \frac{106}{10$$

$$= -6i - 37 + 45$$

$$\Rightarrow \qquad \qquad \exists x^{\frac{1}{2}} = \sqrt{\frac{\pi}{3}} \overline{\pi} (\sqrt{3}^2 + 2^2 + \sqrt{3}^2)$$

The groups 
$$AAS(1) = \frac{1}{2} \times 8^{\frac{1}{2}} - \frac{1}{2} \sqrt{31}$$

# 2.14.18.2 Vector Products of the Standard Basis Vectors



Greenly New Arthogonolist club wiper earlies in Arthodology and Jeffelder in Advance account year as the Logical formula also show that experience of the first of the conduction of steel research.

$$j \times j = k$$

$$j(\mathbf{u},\hat{\mathbf{k}})=[\hat{\mathbf{u}}]$$

$$k \times i = j$$

# 2,14,16.3 General Properties of Vector Products

yearon Productings the only entry that for every scows  $\lambda$ 

$$(\mathbf{e}_{\mathbf{S}}) \cdot [\mathbf{b}] = (\mathbf{a} \times \mathbf{b}) + \mathbf{o} \times (\mathbf{o})$$

, is, the first with respect to vector words in (0.0715)

$$\hat{\mathbf{g}} \times \mathbf{g} (-\infty) = (\mathbf{g} - \mathbf{g}) \cdot (\mathbf{g} \times \hat{\mathbf{g}}).$$

$$||c \cdot f_{1}, c|| = (a \cdot g) * (a \cdot c)$$

h is not commutative but anyless manufative interes-

$$\langle x | y \rangle = (-\infty \times N)$$

g long, ageç petike, 1940-6.

$$\lambda_{X}(\alpha_{X}) \leq -(\alpha_{X}(\alpha_{X})) \cdot c$$

Япіделоги ў

as manifed parentheses controlled in  $\partial A$ 

## 2.14.11 Scalar Triple Product

For sealing the  $\phi$  given in the infliction of the supply of  $J:= \sin(t)$  at

$$\mathbf{c} = [\mathbf{c}_1, \mathbf{c}_2, \mathbf{d}_2, \dots, \mathbf{d} = [\mathbf{c}_1, \mathbf{c}_2, \mathbf{d}_1, \dots, \mathbf{d} = [\mathbf{c}_1, \mathbf{c}_2, \mathbf{c}_1]]$$

a perimed in the a and a configuration of a and a

 $g_{0}(g_{0})$  without Sivis 7 for the defendance of  $T_{0}$  4 is we set  $g(x) = x + \left(\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \dots\right)$  from the x 4 corresponding to x and x y y and y

$$c_{i+1}(\rho \times z) \; = \; \exists \quad \gamma = \exists \quad e_i \; + \, \sigma_i \, e_i \; + \, \Delta A_i \, ,$$

$$= \left[ \frac{1}{2} \frac{(a_1 - b_2)}{a_2 - a_1} + 3 \frac{(a_1 - b_2)}{(a_1 - a_2)} + 3 \frac{b_1 - b_2}{a_2} \right]$$

The expression for the kyrath the expansion of a limit correction in a large i to i to i that

$$[\varphi, \varphi, \varphi] = \left. \begin{array}{ccc} \phi & \phi_{\varphi} & \phi_{\varphi} \\ [\varphi, \varphi, \varphi] & \phi_{\varphi}(\cos \phi) + \frac{1}{2} & \phi_{\varphi}(1_{\varphi}) \\ [\varphi_{\varphi}, \varphi_{\varphi}, \varphi_{\varphi}] \end{array} \right.$$

#### Geometric Incorpretation of Sever Lipie Products

The group  $a_i$  and the sign contains a containing of the solution of the contribution of  $a_i$  and  $a_i$  and  $a_i$  are stage vectors ( [give,  $[a_i]b_i$  a.) —  $a_i$  by a  $[a_i]b_i$  and  $a_i$  by  $a_i$  by  $a_i$  and  $a_i$  by  $a_i$  b

e ), some b and c that one b (by e ) is the a substituted as a , b and a or b for b , e , this value b , e aOxig. Uffalloandides, append.

we also i was to intry somethy.

$$[\kappa a b c - \kappa a h \phi]$$

possibly the multiplication of a module performance  $\gamma$  and  $\gamma$  resultings the skiller of the exterminant to V . Furthermore, we prove that

$$\theta \cdot (\hat{\mathbf{o}} \times \mathbf{c}) = (a \times b) \cdot a$$

Proof:



But to pertise or accommend, their respect that the HiC and HiC scale minerals, window both or sit.

$$2\nabla \cdot \mathbf{x} \cdot \mathbf{x} \cdot \mathbf{y} \cdot \mathbf{c}_{i} = h_{i} \mathbf{x} \mathbf{t}_{i} \cdot \mathbf{y}.$$

Introdu

$$A_{ij}(G \times G) = A_{ij}(g \times g) = g_{ij}(g \times g)$$

Cultierre us of their error of degree delepon the  $\epsilon_{y}$  de or failed the vectors, i.e.,  $\times$  is the particular the cost on anad an updass, the wear this anathrighten by significant with energies.

$$\Phi_{T}(\mathbf{b}, \mathbf{a}) \neq \mathcal{B}_{T}(\mathbf{a} \times \mathbf{c})$$

## **Example**

Although the is determined by 10 
ightarrow agg addition, or here of passed in Fig.

The its volume for the expect to agree a and A (Syrics on a and a

$$S=\{\lambda,\, \exists \, |\, \alpha \in \beta = \beta,\, \beta \in \beta\} \, |\, \beta = \{\beta,\, \alpha,\, \beta \in \beta\}$$



#### Spintton:

The variance of the period eloa poor with the serve was a space vectors i . The straints value of the i s i rमार्थनम् ५५८, स्त.

$$[s \circ v] = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} = 0 \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} = 0 = s \cdot 4 = 4 \cdot 3$$

The  $i_{0}$   $\beta$  = 00 and  $m_{0}$  is sign noncolorable  $m_{0}$ ,  $m_{0}$  is proportion; a left wild leading to not only the

of the sines  $e_{ij}$  and  $\frac{1}{2}$  of the infinite parallelegates, we see that

# Testing Linear Independence of 3 Vectors using Scalar Triple Product:

intering contract with the vectors as the Heiled prescriptor  $\rho$  is in qualitative. We can be given Set of sectors  $A_{i,j},\dots,A_{j+1}$  is well independent if the only sector  $a,\dots,a_{j+1}$  and  $A_{i}$  the vector of set of

$$\left( p_{i,j} \right) + k_{j} \partial_{p_{i,j}} \qquad a \in \mathcal{C}_{i,j} \mathcal{C}_{p_{i,j}} = 0$$

is satisfied in a  $\gamma_1=0,\ c_1=0,\dots,\gamma_{n-1}$  . In otherwise, that is, if the, requality in so tiefds the  $c_1$ , we uplie of solders so of very law building so of the type  $\epsilon$  carly coper  $\epsilon + \epsilon$ 

Now the executive most of their ideal permodification is a security independent set for along the sec For Lorining particles of the sociative), we have very exact inside a cooperator, if a (1) rigidity we not on the compression of a scale in player stands on the description a where b is given by the a a

## (herem: 1 (kinser Independence of Three Vectors).

These scorps form a most divide be the until find only time; scalarly list profit is not zone.

Figure  $(a_i,b_i) \in \mathbb{R}^{n+1}$  with a the theorem in the period is deduced. When regressed passed in a distribution of the period is deduced by the associate.

## 2,14.12 Vector Triple Product

This big is the times Leg. ) while all a vector tip's product is value (20.0 × 15 × 5). They graphed a matrix  $x(0) \in \mathbb{R}^{n}$  (and  $(x) \in (n+1)$ ) in

## Examples

Let 
$$s = t + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 0 = 0$$
. The  $t = s + t + t + \frac{1}{2} + \frac{1}{2}$ .

#### Solution:

$$\begin{aligned} \phi_1(\phi) & = \phi(\phi) & = (18 \cdot \phi) h + (24 \cdot \phi) h, \\ & = \phi + (1 + 1 + 1) + 1, \\ & = \phi + (1 + 2 + 1) + 1, \\ \phi_0 & = \phi_1(\phi + \phi) & = (1 + \phi + (-1) + 1) + (1 + 2) + 2, \\ & = (1 + \phi + \phi) + (1 + \phi + \phi) + (1 + 2) + 2, \end{aligned}$$

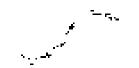
# 2,74,13 Yector and Scalar Functions and Fields. Derivatives

 $(x_0,y)\mapsto (x_0)$  ring monotonical curve when it was a few kines of (a,a,b) is a functions, whose values are well to:

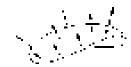
$$\varphi := \left\{ \mathcal{L}(\mathcal{C}) = \left[ \mathcal{L}_{\mathcal{C}}(\mathcal{C}), \mathcal{L}_{\mathcal{C}}(\mathcal{C}) \right] \right\}$$

despitating of the paint. Physicate land sociatiful attitude, of not calculate social-

percent of the property of the second and the second of the second property of the second of the sec



The state being a constitution of the con-



The Artist region is a solution of  ${\rm d}^{-1}{\rm d}^{-1}{\rm d}^{-1}$ 

Comment on Robotion. If we relicence concever p(p) to 163.999 at the section of  $\mathbb{R}^{2}$  and the concept of  $\mathbb{R}^{2}$  and  $\mathbb{R}^{2}$  and the concept of  $\mathbb{R}^{2}$  and  $\mathbb{R}^{2}$ 

$$|x(z_1,y,Z)| = \left[ \sqrt{|x_1,y_2|} Z(|x_2|(x_1,y_2|Z)|) \nabla (|x_1|(x_2|Z)|Z) \right]$$

and  $\delta x > b$  they begin in addition vector or scalar field. A linear geometrical angle y is forced a state appearance of each 18 years field and 18 scalar objects and 18 objects of Castesian Continues.

#### Ехатиріа: 1

Sealer Unclair (Fix International Inspires)

#### Saluaton:

The distance  $\delta P$  of any point Pirom allocal point  $P_{\delta}$  in gapes is a content motion with sendoment of each content of the quarter of the interest of a first sendoment  $P_{\delta}$  is a more content of the last  $P_{\delta}$  ,  $P_{\delta}$  with the point  $P_{\delta}$  is a sendoment  $P_{\delta}$  and  $P_{\delta}$  is a  $P_{\delta}$  content of the interest  $P_{\delta}$  and  $P_{\delta}$  is a  $P_{\delta}$  content of the interest  $P_{\delta}$  and  $P_{\delta}$  is a  $P_{\delta}$  content of the interest  $P_{\delta}$  and  $P_{\delta}$  is a  $P_{\delta}$  content of  $P_{\delta}$  in the interest  $P_{\delta}$  is a  $P_{\delta}$  content of  $P_{\delta}$  in the interest  $P_{\delta}$  in  $P_{\delta}$  is a  $P_{\delta}$  content of  $P_{\delta}$  in  $P_{\delta}$  in

$$N_{ij}^{2} = f(x,y,z) - \frac{1}{2}(1 + \overline{y_{ij}^{2}} + (1 + z)f^{2}) + (2 + z)f^{2}$$

### Examulo:2

vocacrfield (Vollating Levil)

#### Salucion:

to any instant the velocity vectors well on a linear groupy of constitute a sector than the specialist velocity in distribution. The introduce a Corresponding is group the matter and the constitution of A is a function of A and A and A and A are the constitution of A a

$$\forall x, \ y_i \ \exists i \ \exists \ x \times i \ , \ \mathsf{en} \times [x, \ y_i \ \bot] = \mathsf{arcc}(x_i, \ y_i^* \bot x_i)$$

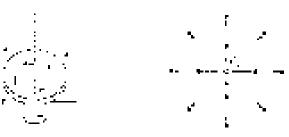
where  $x \in \mathbb{R}^n$  is the production of the x of x and x and x are positive x of rectangled and x are the x and

$$|Y| = \begin{vmatrix} 1 & 0 \\ 0 & 0 \end{vmatrix} = 0$$

$$|Y| = \begin{vmatrix} 1 & 0 \\ 0 & 0 \end{vmatrix} = 0$$

$$|X| = |X| ||X| - A|| = |X| ||X| + 0||$$

Affices of least a record, body one the consequenting validaty links on so m + n Figure by c = App. Another the threshold of vector field. The gray a(b) of the c



Inductional and a replace for a

Case at the first

**Vertor Calculus:** We also allocated analogists of adout 5, such as convergence in projectly and differences that the new typic indicates in a sum always two importants and evaluations in a sum always two importants and evaluations.

**Convergence:** A unit to cooker of the text  $\eta_{\rm ext} p=1/2, \dots$  is ship if converge if there is a vector a standing.

$$\lim_{n\to\infty} |D_{jk}| |D| = 0$$

alic talkd the Imhanetic lifting, september and walker in

$$\lim_{n\to\infty} \hat{\mathbf{a}}_{n,k} = -n$$

Carbonal cold final expenditure of the sources and value coording satisfies and the final section of the content of the conte

Similarly a region for each of the real wayshed its wild to have the limit was fixed costicating the state of a cost conjugate was the subject and of the possible section of the subject that of the possible section (0.0000)

$$\lim_{n\to\infty} \chi(n) \cdot |\cdot| = n$$

Than we write:

$$\lim_{t\to 0} |\nu(t)| = 0$$

Continuity: A cooler traction  $\psi(t)$  is a such that sometimes at  $t = \psi(t')$  is reduced in course explicit each of u and u

$$\lim_{t\to\infty} P(t) = P(\xi)$$

Twelf that the much color of the sity stam, we have sailed

$$g(g) = \left( (e_{ij}^{-1}) \cdot e_{ij}^{-1} (f) \cdot e_{ij}^{-1} (f) \cdot e_{ij}^{-1} (f) + e_{ij}^{-1} (f) + e_{ij}^{-1} (f) \right)$$

Transport elegation is set if, hand only if to these less per one we continue a set if the noor state the most Transport of peaks which one

## 2.14.13.1 Derivative of a Vaccor Function

A value uniform an entry such a Lemma entry at a point if the link wing. In the  $x \times x$ 

$$w(t) = \lim_{\Delta \to 0} \frac{\psi(t-\Delta t) - \psi(t)}{-\Delta t}$$

which the vector x(t) with the Strictler vacuum of x(t) See Figure above the  $x_0$  with the force of the above the subset of the Figure  $x_0$  by  $x_0$  that is a constant above the set A(t) which is a constant of A(t) and A(t).



Process and a contract of the second contract

The installand potents with respect the given California specific stells (see the factor of the most country of the Hard components are different which the other and then the certified with the country of the country

$$\varphi(\beta) := \left[ [G(\beta), [G(\beta), -G(\beta)] \right]_{\mathcal{F}}$$

 $\eta$  (gives ) with a largest index of differentially upon the production of the contraction of the contracti

$$(x \cdot y) = xy$$

$$(x \cdot y) = y' + y' \text{ and in particular.}$$

$$(x \cdot y) = (x \cdot y + y \cdot y')$$

$$(x \cdot y) = (x \cdot y + y \cdot y')$$

$$(x \cdot y) = (x \cdot y + y \cdot y')$$

$$(x \cdot y) = (x \cdot y + y \cdot y')$$

$$(x \cdot y) = (x \cdot y \cdot y') \cdot [(x \cdot y') + (y \cdot y') + (y \cdot y')]$$

 $\pm \mu_{\rm C}$  and the vectors must be greefully as a type occurs whose in this letter is not to in this way

#### Example!

Decide to proper update the costed cooling

### Solution:

Let with the Legiph in which consists on gift is, opinions, see,  $|\psi(t)| = a$ . Then  $|\psi(t)| = b$  is k = c', which for  $|\psi(t)| = a$ ,  $|\psi(t)| = b$ . Then, by amorphospher Then, ideas the to keeping result. The desirable  $|\psi(t)| = a$  is sufficiently consistent of  $|\psi(t)| = a$ . Then, we do not sufficiently  $|\psi(t)| = a$ .

# 2.14.13.2 Patriol Derivatives of a Vactor Function.

I remound that session we continue a salpiferon at an ordinate set also eponding between the or all lay say be introduced as  $\lambda$  have. Suppose that their engagneris characters have the

$$\mathcal{L} = \{ \mathbf{e} \mid \mathbf{v}_{t}, \mathbf{v}_{t} \} = \mathcal{L}_{t}^{T} + \mathcal{L}_{t}^{T} + \mathbf{e}_{t}^{T}$$

and differentiative functions on a verticities  $a_1,\dots,b_n$ . From the partial durings to bring with inspect to  $\frac{1}{2}$  is centred by it fair that x defined as  $\pm a$  v.c. y if y by

$$\frac{\partial \mathcal{L}}{\partial t_0} = \frac{\partial \mathcal{L}}{\partial t_0^2} + \frac{\partial \mathcal{L}}{\partial t_0^2} + \frac{\partial \mathcal{L}}{\partial t_0^2} \mathcal{L}$$

$$\frac{\partial^2 \mathcal{L}}{\partial t_0^2 \partial t_0^2} = \frac{\partial^2 \mathcal{L}}{\partial t_0^2} + \frac{\partial^2 \mathcal{L}}{\partial t_0^2} \mathcal{L} + \frac{\partial^2 \mathcal{L}}{\partial t_0^2} \mathcal{L}, \text{ and essential section } \mathcal{L}$$
Example:

(C)  $\mathcal{L}(t_0^2) = a \cos \theta \mathcal{L} + a \cos \theta \mathcal{L} + \frac{\partial^2 \mathcal{L}}{\partial t_0^2} \mathcal{L}$ 

(C)  $\mathcal{L}(t_0^2) = a \cos \theta \mathcal{L} + a \cos \theta \mathcal{L}$ 

(C)  $\mathcal{L}(t_0^2) = a \cos \theta \mathcal{L} + a \cos \theta \mathcal{L}$ 

(C)  $\mathcal{L}(t_0^2) = a \cos \theta \mathcal{L} + a \cos \theta \mathcal{L}$ 

While splitted and (all one is eliabplications at advised ties to accommend and will be also a set, in the i exasocitore:

# 2.14.14 Gredlant of a Scalar Field

We shart sho like that we do the weather that built appropriations and full the introductions was need that, say we Initial Trivial dependence of kentagy obscurse social factor a depote handled the a existly. The relation between me teorydes of felders accompliane thy the "gradient". He the the gradients of gram pre-site importance.

**Definition of Gradient: The oldsymbol{u} adjoint oldsymbol{u} and oldsymbol{u} to oldsymbol{u} adjoint oldsymbol{u} and oldsymb** <u>...</u>:

$$1 = \eta + i \beta = \frac{\partial r}{\partial x} + \frac{\partial f}{\partial x} + \frac{x}{\partial x} \frac{f}{\partial x} g$$

If ordinantities is earned that it is different each. It has become capital it as its rapity with plies obtained engi dera ta format de Jie Ulfregat at aconque

$$\lambda_{ij} = \lambda_{ij} = \frac{1}{\beta t_i} \left( -\frac{\lambda_{ij}}{\alpha t_j} \right) + \frac{\beta_{ij}}{\beta t_j} \partial_t^2$$

رزا به درای به (اها د مناه ۲۵ تو ۲۵ تو ۲۵ تو تو ۲۵

$$\operatorname{quark} r = \nabla r^2 + \frac{\alpha r}{2a} \cdot \frac{2ar}{2b^2} \cdot \frac{3a^2}{6a^2} \cdot \frac{3a^2}{6a^2}$$

FOR EXAMPLE  $1.5 imes 6.21 \pm 9.2 + 9.2 imes 6.2 imes 6.21 \pm 0.21$  for 0.321 imes 9.2 imes 6.21 imes 6.

We show sterilliat grading a vector; that is, also generally the invariant sense of components, in Lee  $\alpha$ which are disable. That is independently  $C_{ij}$  is confidently of the expression of  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  are  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  and  $C_{ij}$  are  $C_{ij}$  Fix one how the gradient valuated to the  $r_0$  -  $r_0$  large of the variations of  $r_0$  and  $r_0$  in f end methods of the interpretation area this retails great by the near-all derivatives, as well was finall relations. The idea of attention this to office  $\phi$  directions seems arrived and legges  $\phi$  the condect of  $\phi$  and der eather.

## 2,14.15 D!rectional Derivative

The two probatigated factors and S is only fixed direction group by some totals desired as a last C is the substantial probability of S and S is the substantial probability S is the substantial S.

$$|2. - \nabla_{ij} - \frac{D^2}{ds} - \ln \frac{n(C) + n(C)}{s} = (s + 4 \sin s \cos s \cos s \cos s \cos s + 1 + C)$$

where  $\omega$  is a variable p(i) in the row  $D_{i}^{\omega}$  loss direction of Arasia (Fig. 5-204)

For (y,y) by (x,y) self-arrowing self-accompanies and (x,y) in Lycolar Thom the Ley C(x,y) satisfy

$$1 + ||q|\xi| + q(g_0) + 2(g_0) + 2\xi_0(g_0 + p_0) + ||q|\xi|| \le 0 + 2\xi_0 +$$

 $(p_0)$  the position spectra of the Equivalent of the attract  $(p_0) = 2006 \times 1000$  and the for  $(p_0) = 1006 \times 1000$  and  $(p_0) = 1000$  and  $(p_0) = 1000$  are small derivatives, and equivalently of the attraction  $(p_0) = 1000$  and  $(p_0) = 1000$  are small derivatives, and equivalently of the attraction  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$  and  $(p_0) = 1000$  are the small  $(p_0) = 1000$  and  $(p_0) = 1000$ 



$$S_{ij} = i (\hat{\beta}_i)^2 = \frac{\partial^2}{\partial z^2} + \frac{\partial z}{\partial z} \chi^2 + \frac{\partial^2}{\partial z^2} \chi^2 + \frac{\partial \hat{\beta}}{\partial z^2} \pi^2.$$

where  $m_{i}$  is a function from  $m_{i}$  or i threshold in  $m_{i}$  and  $m_{i}$  are  $m_{i}$  and  $m_{i}$  and  $m_{i}$  and  $m_{i}$  are  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{i}$  are  $m_{i}$  and  $m_{i}$  are  $m_{$ 

$$|\psi| = P_{p}^{-1} + \frac{dt}{d\theta} + c \cdot c \sin \theta^{-1} \qquad (|D| = 1).$$

estimated in galaxist, it is a fraction in given by a various  $\alpha$  -any length. In the

$$\partial_t r = \frac{\partial^2}{\partial r} + \frac{1}{|a|} a |g(a)b| \text{ instanc} \quad \frac{\partial}{\partial r} |g(a)p(t) \text{ set } t \in a \text{ distribution of all } t$$

### Bample

## Condinate Directional Derivative

#### Solution:

We obtain give  $t + 4d + 0 \leq t \leq n$  and  $t \in \{0, \dots, 3\}$ , give t = 2! + 6! + 6n.

$$\begin{split} G_{5}^{(f)} &= \frac{6}{(\pi)^{4}} e_{3}^{(res)^{-1}} \\ &= \frac{1}{25} ((-28))(5(\pm i) - 69) \\ &= \frac{1}{35} (-28) (-\frac{1}{\sqrt{5}} - 1)/39 ) \end{split}$$

the managing of white terminal concesses also in the distribution of A

# 2,14,16 Gradiant Characterizes Maximum Increase

# Theorem, 1 (Gradien's Maximum Incresse)

Special of  $H_{0}$  include fore series, it has the distance of massing a project of the  $\theta$ . For all they distance belonger of the range of the same forms.

 $I = 9.5^{\circ} \cdot | \text{to gmdd} | \text{cosy} = \text{modd} | \text{cosy}$ 

where  $\gamma$  is the angle collection and grown. Now it is a continuous of the engineering of Pacchard Pa



. Consider this is of the form that  $(\mathcal{A}_{\mathcal{A}_{i}})_{i=1}^{n}$ 

Since y = 0 notes the  $y(i)^{-1}$  less the cheepen of  $y(x) \in \mathbb{R}$ , we know that direction it is associated as follows:

**Gradientes Surface Normal Vector**  $\mathcal{S}$  with a law of the gradient was twing a negligible with a manual  $\mathcal{S}$  is space of the by

$$\mathbf{\hat{y}}_{i,j} = \mathbf{\hat{y}}_{i,j} + \mathbf{\hat{y}}_{i,j$$

as labeled. We two that a structure of his depoint on given by

$$d(t) = d(t) + d(t) + d(t) + d(t)$$

Note those water S(x) with S(x) being components an intersalistic quantum.

$$10 \qquad \qquad \exists (da, g) \in \mathcal{F}(b - a)$$

Alle the diseason of Clari-

$$f(t) = \sigma(t) + \varphi(t) - Z(t) h.$$

The tension of the expection X is a few permential to the property state of all coveres of the tension of the expectation of

$$:= -\frac{\partial f}{\partial x} x + \frac{\partial g}{\partial x} x - \frac{\partial f}{\partial x} x^{-1} = \operatorname{cglob}(\partial x + 0)$$

The inputs of the probability of given runnial of the energy of the tangent plans. The result in chown probability in the lagrest state, where give the energy of the tangent player of each of Se, we have the least of Egypon page.

# Theorem. 7 (Gradient as Surface Mormal Visco) I

Lot fibe a differential less distribution the regressing a surror  $S_i(x,y_i)$  is the parts. Then the granter of  $S_i(x,y_i)$  is the parts of  $S_i(x,y_i)$  is zero very  $f_i(x,y_i)$  and extractor of  $S_i(x,y_i)$ .

**Formment.** The Surviver gives by teach the surviver, select parameter for a surface of the search median of

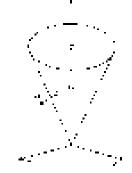
#### Ekample:

# Gradient as Sunlace Normal Vectors

Figure with formal vectors of the control is and if  $\psi_1 \ge 1 = 2/3 + \sqrt{2}$  , at the point P (0,1) (  $1 \le 1$ 

#### Salimon;

The contains the Model's integer to the p and p are p and p and p and p and p are p and p and p and p are p and p and p and p are p and p are p and p and p are p and p are p and p and p are p are p and p are p are p and p are p are p and p are p and p are p a



Cone 247 - To legal yayya il

Hence, by I sector 2, grading allowing weeks of the consist x and x Now also thomas vector at part x All the

$$c_{ij} = \frac{1}{|\log c_{ij}|} |g(ac_{ij})^2 = \frac{2}{\sqrt{a}} c_{ij} + \frac{2}{\sqrt{a}} c_{ij}$$

audited teaching

### 2.14.12 Vector Fields that are Gradients of a Scalar Field ("Potential").

Rome contributes have the grown tage that they use the option e : Not the earth of such that be harded and departs as each that is given by a very all a minimum of the that had the gradient of a very all a minimum of the factor and call of a very all that had a contribute of a factor of the earth of

### 2.14.18 Diversion cools Vector Floid

via ten dia les eves mich en la macronomin anginecimpiano enyacoso die qualita ten barger 55 60 fb. it i. Hasi ayo sa susano troignationt, comunication la congenes. Troignation est seción

Let  $p_{ij}(p_{ij})$  be an ifferential relief on light from energy,  $p_{ij}$  and contained an optic paper, and the  $p_{ij}$   $p_{ij}$   $p_{ij}$  the  $p_{ij}$   $p_{ij}$ 

1 
$$e^{i\varphi}\psi = \frac{\partial \psi_i}{\partial x} + \frac{\partial \psi_i}{\partial x} + \frac{\partial \psi_i}{\partial x} - \frac{\partial \psi_k}{\partial x}$$

is called the divergence of v or the divergence of the sector lies in  $\Theta$  had by v. And not common reaction in v,  $\omega$  (ivergence of v is  $\nabla v$ 

$$=\frac{1}{4}\frac{9}{6\pi^2}+\frac{9}{3\pi^2}+\frac{6}{2\pi}\frac{2^2}{2^2}+\frac{2^28}{2^2}+2^2(2^2+2^2)=\frac{10^2}{2\pi}+\frac{28}{2\pi}+\frac{28}{2\pi}$$

countries and denote the property of the formula of the state of the state of the property of the state of  $\nabla^{1}$  in the state of the state of the state of  $\nabla^{1}$  in the state of the s

#### Example:

$$\begin{aligned} f' & \qquad \qquad \cdot = (c + i + 2 + y) + p x^2 h, \\ \text{then} & \qquad \text{then} & \qquad - kx + 2 + x + 2 + x \end{aligned}$$

We draft see grants (light the three gains) is a smarphoreon preside meaning. Clearly (lie vertex of a number of all the characterize a physical or governously depends in the particular of the particular of the characteristic form of the characteristic particular of the characteristic form of the characteristic form.

#### Theorem, 1 (Invertuose of The Divergence)

Indivations of the indicator configuration points in a page (and), of the inea, on Wilhull not on the particular
particle of the distributes.

now liet us fan it after neien in epiere oak trikt kan alligestraf tilde for trologgisfoa de billitet. Aberganoa

If  $\xi_{2}$  is an initial other embade spatial run class. Then

grap 
$$\mathbf{r} = \frac{\partial f}{\partial z} \mathbf{1} + \frac{\partial f}{\partial v} \mathbf{1} + \frac{\partial f}{\partial z} \partial z$$

$$\mathbf{y}(\mathbf{v}) = -\mathbf{d} \cdot \mathbf{v}(\mathbf{q}(\mathbf{a}), \mathbf{r}) = \frac{\mathbf{g}^{2}\mathbf{r}}{\partial \mathbf{v}^{2}} + \frac{\partial^{2}\mathbf{r}}{\partial \mathbf{v}^{2}} + \frac{\partial^{2}\mathbf{r}}{\partial \mathbf{v}^{2}} + \frac{\partial^{2}\mathbf{r}}{\partial \mathbf{v}^{2}}$$

 $S_{\rm tot}$  . The expression energy engines the Labeldoin value to  $A_{\rm tot}$ 

$$m_{\pi}$$
 forest  $m_{\pi} = \nabla^{2} m$ 

#### Bromale 1.

#### Gravitational force

to gravity and to explicitly q adject of the scalar submode  $q_{2}, q_{2} \approx q_{1} \sin q_{2} \sin q_{3} = q_{2} \sin q_{3}$  $\Rightarrow$ pistike N(i=0) Appointing to (2i) this means in U(i) by U(i) V(i)

The first arginization by the common programment of the strength of significance or the divergence of wire closure a (and the a  $W^0$  . All there is the a section of the solution of extending varieties a a b a b a b a2:1.00 Assist (a)

## danmple7.

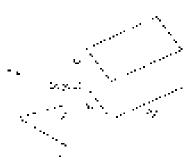
# . Motion of a compressible thirt. Physical mouthly of the divergence

We consider the m**otor o**f a turb in a step on Shewing revenues earliering the require points are non-Let K detailed by the property  $\mathbb{R}$  is to ideal about state in metric observable  $\phi_{k}(e_{k}, e_{k})$  ,  $\phi_{k}(e_{k})$ control requests in many decreases. Casses and expercit avolarge demands in the facility making mention The  $\mathbb{P}^{n_1}$  is a  $(n_2)$  depends on the description  $n_1 \neq n_2$  in section (i.e.,  $n_2 \neq n_3$  ),  $n_3 \neq n_4$  in  $n_4 \neq n_4$  . esseund in all our fluid in companies i Pai

We obtain the new flow through a kind, rectangled local Michael dimensions for  $\omega_{\mathcal{F}}$  by with -lges, para et le the coordinate stats (Fig. ballos). Wright (1997) নেত্র  $\lambda$  = 2 ,  $\lambda$  > 1  $\pm$  1 $K = (V_0, V_0, V_0) = A_0 = V_0 \cup (V_0^{k})$  be the wellowing explor of the moreon. We say:

P = P + |P| + |Pcontinuation of Amilia revenue transport many it and female 8. Ley Larvaine, burt of domain year, which long community light us calculate the attenual in the maying to be in this consider on i  ${\bf T}(A)$  in a tiple the boundarie Bratis. The late late of mass waving  ${\bf T}_{a,b}$ If por untilitie, Consider the face many ratherest, from  $\phi_{ij}$ rances a trail 8 A de la Tille contrataces les chaires de la permite ം. at kearno comport rolling ministria. He s⇔, ലിഷ്ട്രം ഗ്രീ aid entering this right, was facely by the continuous interior at Ma ਹੁੰ ਅਤੇ ਵਿਚ ਵਿਚਾਰਨ ਦੀ ਲੀਏ ਨੂੰ ਇਨ੍ਹਾਂ

$$\{ (ab, b_{\alpha}, \Delta), \Delta \in \Delta t = \{ (b_{\alpha})_{\alpha}, \Delta \in \Delta \tau, \Delta t \}$$



Programment in a superior distribution of

Where the Subsempt Viction exists, this expression enough to the landace in termassion in a cash of the The PF brough the operator rate of may be see it must be approximately  $(\mathbf{s}_{\mathcal{F}_{i,n}}, \mathbf{s}_{\mathcal{F}_{i}})$  and  $\mathbf{s}_{\mathcal{F}_{i}}$ Hallabook light at 17 grid (lengther

$$\Delta m_2 \Delta r \Delta s \Delta_1 = \frac{\Delta m_1}{\Delta_1} \Delta R \Delta s \left[ \Delta s v_2 + (\omega_2)_{q+2,q} - (\omega_2)_{q} \right]$$

9.14 approximate constitutive. The surject energy are observed by constituting the single  $m_{
m c}$ 1918. If  $\mathbf{p}_{i}$  is the code of  $\Delta$  if the fact that setting a knowledge  $\mathbf{p}_{i}$  in the  $\mathbf{p}_{i}$  the positives compare in Mdit Profesione i terra 42 dicontromato di

$$= \frac{\Delta A_{\rm s}}{\Delta t} + \frac{\Delta A_{\rm s}}{\Delta t} + \frac{\Delta A_{\rm s}}{\Delta z} \left[ A_{\rm s}^{\rm op} A_{\rm s}^{\rm op} \right]$$

compane.

$$\Delta u_i = (u_i) \in \mathbb{R}_{+} \setminus \mathbb{R}_{+}^{n}$$

$$\Delta \mathbf{u}_t = (\mathbf{u}_t)_{t \in \mathbb{R}^{n-1}} (\mathbf{u}_t)_t$$

Trial jest fraggrif Misganegoville juguage Sona ventina Jarstyurt istnæbg af to

$$\frac{\Delta t^2}{\Delta t} \sqrt{2} \Delta t^2$$

Historical methods as providency, the define resoluting equation by  $s \neq \delta \xi$  we get

$$\frac{\Delta \Omega_{\rm q}}{\Delta v} + \frac{\Delta (v_{\rm q} - \Delta Q_{\rm q})}{\Delta V} + \frac{\Delta N}{\Delta V} = \frac{\Delta N}{\Delta V}$$

forw walla for Agridual distappe and randaming et

$$\label{eq:continuous} |\psi(\phi_{i})|^2 \simeq |\psi(\phi_{i})|^2 = \frac{\partial p_{i}}{\partial z}$$

$$J=-e_{\nu}=-\frac{d\rho}{\hbar^{2}}+\partial A_{\nu}(\rho v)=0$$

unto important term and sociolo the consettante, the content microid mass extre continuity equal visible in complete Martine Reco

If the fibrations observe that is independent of time, then  $\frac{\lambda n}{2n} = 0$  and  $1 = \infty$  singly equation is

$$A = - - \frac{1}{2} \log \left( \frac{1}{2} \right) + 0$$

fit entensitari kontaten i suthet he frikt sin an preside, tide egiztha (6) bacamas

This relation is someones that satisfying the community Bity Thanpiers so to located the conducted for or throught along the popular element is necessary along the dynamic consumption that its library may be some considerable Pix-assemblish consequents.

From this rise assisting to sharlow a notice is all tememory (MS), a tighty sweeking, the divergence obesit response they

If the Medite vectory of both is neption and bristy; if it and entire specific collections between the second of the specific between the second of the specific between the second of t

### 7.14.19 Seri of a vector Floid

taractions are poster present are easien perhaption with tries. We now out now to discuss the our

ally wizite. Ignoreante i Conversar prominerte, and ich

$$\mathcal{C}(Y_i \neq X_i) = |X_i|^2 + \lambda_{ij} + |X_i|^2$$

as a different able years fundament finan mei ur etwi

$$||\mathbf{g}(\mathbf{r})||_{\mathcal{F}} = ||\nabla \times \mathbf{r}|| \frac{\partial}{\partial t} - \frac{\partial}{\partial t} - \frac{\partial}{\partial x} - \frac{\partial}{\partial x} ||$$

$$||\mathbf{g}(\mathbf{r})||_{\mathcal{F}} = ||\nabla \times \mathbf{r}|| \frac{\partial}{\partial t} - \frac{\partial}{\partial x} -$$

$$\left( \mathbf{v} + \mathbf{v} \right) = \left[ \left( \frac{1}{3 \gamma_0} + \frac{3 \gamma_0}{3 \gamma_0} \right) \delta + \left( \frac{3 \gamma_0}{3 \gamma_0} + \frac{3 \gamma_0}{3 \gamma_0} \right) \right] + \left( \frac{3 \gamma_0}{3 \gamma_0} + \frac{3 \gamma_0}{3 \gamma_0} \right] V$$

is called the purify  $\Gamma$  discount under a protocount of the vector field estimate  $x_i x_i$ 

noticed of builty the notation for each section  $(a_0, b_1) = a_1 a_1$  distinct  $(a_0, b_1) = a_1 a_2$  builty  $(a_0, b_1) = a_1 a_2$ rigio consyli

### teample 1.

%h1 βη 4000 ο ∮14 an er : Çartes an cou di wies let.

$$V = \sqrt{n} = 8 \times n = -n$$

Inon 110 give-di

$$\begin{aligned}
\cos(x) &= (2x + 6) \\
&= \begin{vmatrix} x & y & y \\ 0 & 0 & y \\ 0 & 0 & y \end{vmatrix} \\
&= -(2x + 6) &= (2x + 6) &= (2x + 6) &= (2x + 6) \\
&= -(2x + 6) &= (2x + 6) &= (2x + 6) &= (2x + 6) \\
&= -(2x + 6) &= (2x + 6) &= (2x + 6) &= (2x + 6) &= (2x + 6) \\
&= -(2x + 6) &= (2x + 6) &= (2x + 6) &= (2x + 6) &= (2x + 6) \\
&= -(2x + 6) &= (2x + 6) &= (2x + 6) &= (2x + 6) &= (2x + 6) \\
&= -(2x + 6) &= (2x +$$

The cultivariate remainded to the contract of the form f is the contract of  $\mu$  the  $\mu$  pion f and f is the fWe shall say this exposulties tale and hat around the partition of the

### Ecomple 2

### Rotation of a rigid body. Relation to the cur-

1 . This act including  ${f d}$  body  ${f E}$  about a fixed by a independent in the order  ${f d}$  in  ${f e}$  ,  ${f e}$  we consider the  ${f e}$  in  ${f e}$  in in the Chection of the error of rowson, where a(x,y) is the angular space of the randon, one a(y)differences. Let the it will appear above earlies and in the processing two they be desired. ratettan en des realiassera libitibal eur.

where are the cost of vector of timesting about with respective a Carrier and continuous about in leading. proprigition for the selection of the less than search to engage Carpatian specify steeling on that

$$00 = -0.88 \, \mathrm{kpc} \, \, t = 47 \pm 28 \pm 28 \, \,$$

, which the whole included to the zick suit bord

$$v = -\lambda x \times 7 + \frac{x}{6} + \frac{x}{3} + \frac{x}{6} +$$

معنور مسابه أأورين

Here  $i \in \Theta$  where i is the contribution of the degree of the color of the first sine contributions in al forence, and forming  $m_{
m c}$  = a presidui setter  $\sigma$  galar speed  $\sigma$  of the  $\sigma_{
m co}$  on

Fully institutions. If the standard f in the particular there g(f) = 0 gives an even G at  $g \circ g \circ g$  in f

FOR my with each unusury different able space municipality

$$3. \qquad \qquad \text{or figure 5} \quad 1$$

as can easify according by the traditional and all gently-gar-

$$\operatorname{Uran} f = \frac{\delta^4}{\delta v^2} + \frac{\delta^4}{\delta y^2} f + \frac{\delta^4}{\delta y} \kappa$$

$$\begin{aligned} & 2.1 \, (\text{grad} \, \, \hat{\Omega}) = -\frac{3}{2} x - \frac{3}{2} y - \frac{3}{2} y \\ & -\frac{3}{2} x^2 - \frac{3}{2} y - \frac{3}{2} y \\ & -\frac{3}{2} x^2 - \frac{3}{2} y - \frac{3}{2} y - \frac{3}{2} y \\ & -\frac{3}{2} x^2 - \frac{3}{2} y - \frac{3}{$$

Hence if a vertical forcing is the gradient of a special politic light of a the vertice of a Suberther and this essentials the relation in a field, we also say more and without gradient fields each it ingle into an emitted constitution of the operation of the operation of the constitution of the operation of th

r out live 0, then R be R be be on the section. Relati

### Esample:

The growth, this includes our  $p \neq 0$ . The trade in the rotation of right coordinate this section is not interesting to not we can each only  $z = 2\omega \times 0$ . A similar velocity field is obtained by disting comed in a  $2\omega p$ .

Other than  $(\phi)$  and the key formula for any twice contributely different altha  $\epsilon$  when  $\epsilon$  is that is,

It is also the case as with a intra control of the  $\omega$  case routlet and the altergence as a lost A proof of (1) in the series of y for the definitions of contact the x -time x -architecture. Let  $x = x_0 + x_0 + x_0 + x_0$ 

$$\begin{aligned} \cos(x) &= \left[ \frac{2}{\partial x_1} + \frac{1}{2x_2} + \frac{2}{2x_2} \right] \\ &= \left[ \frac{2}{\partial x_1} + \frac{1}{2x_2} + \frac{2}{2x_2} \right] \\ &= \left[ \frac{2(x_2 - \partial x_2)}{\partial x_1 - \partial x_2} \right] + \left[ \frac{2(x_2 - \partial x_2)}{\partial x_1 - \partial x_2} \right] + \lambda \left[ \frac{2(x_2 - \partial x_1)}{\partial x_2 - \partial x_2} \right] \\ &= \int v(x, y) dx \\ &= \frac{\partial}{\partial x_2} \left( \frac{\partial x_2}{\partial x_1} + \frac{\partial x_2}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left[ \frac{\partial x_2}{\partial x_1} + \frac{\partial x_1}{\partial x_2} + \frac{\partial}{\partial x_2} \right] + \frac{\partial}{\partial x_2} \left[ \frac{\partial x_2}{\partial x_1} + \frac{\partial}{\partial x_2} \right] \\ &= \frac{\partial}{\partial x_1} \left( \frac{\partial x_2}{\partial x_1} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac{\partial}{\partial x_2} \left( \frac{\partial}{\partial x_2} + \frac{\partial}{\partial x_2} \right) + \frac$$

The built is perfect in terms of sent alternal, but if it is suppressed to have a physical or population annihilation between the during all these participates. This is but, it is to low

#### Theorem. I (invariance of The Curl)

The large called the promotional case independent of the payout and proceed Callesian is each of 23,930,050 in address.

#### 2.14.19.1 Important Repeated Operations by Nable Operator [V]

$$1 \qquad \text{swipped} \ (1, |\mathbf{v}|) = \frac{\partial \mathbf{v}}{\partial \mathbf{v}} + \frac{\partial \mathbf{v}}{\partial \mathbf{v}} + \frac{\partial \mathbf{v}}{\partial \mathbf{v}} + \frac{\partial \mathbf{v}}{\partial \mathbf{v}}$$

- 2 million literature (VIII)
- $S = \operatorname{riv}_{\mathcal{C}} \operatorname{pri}_{\mathcal{C}} = \operatorname{Vec}(\nabla \mathbf{w}^{\star}) = \mathbf{g}$
- confound=arabidy (一致) と = ヤイン (2) | 文件
- $\label{eq:constraint} c_{i,j} = \operatorname{disc} d(\phi_i) = \operatorname{disc} d(\phi_i) + \nabla^2 \phi_i 

# 1.14.20 Vector integral Calculus: Imagral Theorems

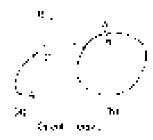
## 2.44-36.1 Sine Integral.

î în 200 0220 di Albedi nerpalis si din pe și (finalură ngelea a agrenții a cefi (fembeura

- $2 69 [m0, m0, a/9] = m9! + p.d(1 + j.ds + (a \pi) \pi a/9]$

жин ражит сы сия Соридалы ебіргерізсельдій

Violan Othe call of treg wing Alloy's sinting wing and Ricky's feminal point. Otherwise the direction from almost in which investes is valid the positive direction on C. We can indicate the circle on type for two (as it always Tigure (alt.) The vorte water of Markotinida busin showely set (by). The indicate because such of its points wheat of called a control of the points wheat of a circle earlier of C. Person under tangent at each of its points wheat of a circle earlier of C.



Terbin  $\mathbf{x}^{t}\mathbf{y}^{t}$  Check representation (2) such that other ordered by an after designation of the design for the expenses for a person point of C.

#### 2 14-20:2 Definition and Evaluation of Line Integrals

Alcoholis for the feet of the first strong of surfined by

$$J = - \int_{\mathbb{R}^{N}} \mathcal{P}(t) \, dt = \int_{\mathbb{R}^{N}} \mathcal{P}(t) \, dt \, \frac{\partial T}{\partial t} \, dt$$

Information parents without low control and a continuous problemes.

$$\begin{split} J' &= \int_{\mathcal{I}} \Gamma(t') \, dt = \int_{\mathcal{I}} (F(t) \cdot F_{0}(t) + F_{1}(t)) dt + i \, \partial_{t} f(t) \, dt + 1 \\ &+ \int_{\mathcal{I}} F(t') \cdot F(t') \cdot F(t') = \int_{\mathcal{I}} \Gamma(T(t') + F_{1}(t') + F_{2}(t')) \end{split}$$

If the path of integrating C(n)(2) is a claims, but on, then instead on

We see  $\Gamma$  of the integral in (2) on the Lightlin domain integral of a tunes on or taken over the interval BA/BB on the (letter) the positive eigenon integral B and the reading C (in a country integral B) with B and B converge smooth B, according to the makes C disposense confined as

#### Etamole 1.

. Proceed the of the filliograph P(x) where P(x) ,  $[-\infty, -\infty)$  ,  $[-\infty, -\infty]$  and P(x) be contained by P(x) with P(x) and P(x) and P(x) and P(x) and P(x) are P(x) are P(x) and P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) and P(x) are P(x) and P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) and P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) and P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P(x) are P(x) and P(x) are P

Sulution:



Wintegralia-но СЦу.

### Bample 2.

#### Une integral in space.

First resonal training rais in open all constraints on a solution (  $\phi_i$  ),  $\phi_i$  and  $\phi_i$  (  $\phi_i$  ending  $\phi_i$  in Eqs. (a)  $\phi_i$ 

 $F(D,\sigma) = \int C(D,\sigma) Z(x,y) = X(x,y) = X(x,y)$  show C(x), where  $F(D,\sigma) = C(x,y)$  is a semi-property of where  $F(D,\sigma) = X(x,y)$ .

### Salutions

We have sets a cost if 
$$x(t) = \sinh x \cdot (t) = St$$
. Thus 
$$\frac{f(x(t)) - f(x(t)) - f(x(t)) - f(x(t)) + f(x(t))$$

- **1. Chalteofrepresentation** (Coston version and Legislavius given), and Coopera on the carticular of the center of the consecution and the second of the consecution - 7. Choice of path ( Docs it is to unchange if we integrate from the piction to the old point of business and exclusive that it is unwest a year, in general, somewhat with 5.

#### Емадирію Э.

### Dependence of a line integral on path (same undquints)

Evaluate for the integral (2) of  $n\in (n-22,n)$  where n=n+1strong two different paths with the same into look  $t\in \{0,1,1\}$  at  $t\in J$  ecano terrino contro (1, 1, 1), nai ety 7 gillekont la li-karivia 3(1

(a) C) the designs me segment  $q(0)=\{q,q,q\}$  , 0=q+0,  $0\leq t\leq t$ 

$$0 \leq C_{j} \leq \exp \left( \operatorname{sol} \operatorname{add} \left( \operatorname{and} \operatorname{sol} \left( s_{j}^{2} \right) + \left[ s_{j}^{2} + S_{j}^{2} \right] + \operatorname{and} \left( s_{j}^{2} + S_{j}^{2} \right) \right) \leq 1.$$

#### Solution:

is: He substituting surface to bottom  $((x,y_0) = \{y_0, y_1, y_2 = y_0, y_1, y_2 = y_2, y_3 = x_3, y_4 = x_4, y_4 = x_4\}$  $F_1 = (1.11)(-1.1) + 6$  Hereafted treg a word to

$$\begin{split} \frac{1}{6} G(t) dR &= \frac{1}{12} \sigma(t_1(t) + t_2(t) - \int_{\mathbb{R}^2} \left[ 5(t+t)^2 (t+t) + t_1^2 \lambda \right] (t+t) - k (t)^2 \\ &= \int_{\mathbb{R}^2} \left[ G_0 + t^2 \right] - t^2 \left( t^2 + \frac{1}{2} + \frac{1}{2} + \frac{1}{4} + \frac{3}{42} \right] \end{split}$$

ib) Similarly exsubstituting turnous a dissociating  $\ell_2$  was desirable a tagotic with the ptf  $C_2$ 

$$\int_{(0,1)} h_1(t) \, dt = \int_{0}^{\infty} F(t,y)(t) \, f_y(t) \, dt = \int_{\mathbb{R}^2} \left( (2^{2^2} - t^2 + 2t^2) \, dt + \frac{2}{2} + \frac{1}{2} \cdot \frac{2}{t} + \frac{2}{3} \cdot \frac{2}{t} \right) \, dt$$

habita results are a more if, substituting the product is seen as given  $\Gamma$  is shown the inexpectable of  $\Gamma$ plugger (2) was in degree p against p and p in P and p in P are P . Some first P is P and Pga, rana gwandi *s*e inen alebon A 4.5.

Our weight point to be f at  $g_{ij}$  symptomic  $h_{ij}$  and  $h_{ij}$  and  $h_{ij}$  and  $h_{ij}$  and  $h_{ij}$  and  $h_{ij}$ physoglappidatip a The element average as about 1000 footbol

### 2.14.20.3 General Properties of the Line Integral (3).

romant not properties of magnets in sequebles we base on emerge casing forms as for the imagnets.

$$\int_{\mathbb{R}^{N}} \langle r| f(r) | dr \rangle = \int_{\mathbb{R}^{N}} \langle r| f(r) | dr \rangle = \int_{\mathbb{R}^{N}} \langle r| f(r) | dr \rangle$$

$$\int_{\mathbb{R}^{N}} \langle r| f(r) | dr \rangle = \int_{\mathbb{R}^{N}} \langle r| f(r) | f(r) | dr \rangle$$

$$\int_{\mathbb{R}^{N}} \langle r| f(r) | f(r) | f(r) | f(r) | dr \rangle$$

$$\int_{\mathbb{R}^{N}} \langle r| f(r) | $

where in the file managebove the pale Clara between into two arcs C. and  $C_{\mu}$  the flexibility same relations a  $C(F_{\mu})$  be  $C_{\mu}(\mu)$  (see constant) dowe) he denotes  $C \otimes C \otimes C$  for some of the depote  $C \cap C \otimes C$ riagration along Charaversed, the salpert residence is in the PAPIDs A.



## 2.14.20.4 Line Integrals Independent of Path

$$\int_{\mathbb{R}^{n}} f(x) \cdot dx = \int_{\mathbb{R}^{n}} f(x) dx + f(x) - f(x) dx$$

as defens, in these integrals from a continue a and a and B averaged B . The value of with an integral, percently depends not any on A and  $B_i$  but also on the path C along A can  $H^i$  . The C Ashows in two male Statics, instruction, it is seen to accept in all conditions for independent  $\Theta \cap \Theta \cap \emptyset$  . so that war jamine sa persente in intoors. In groom Allo eletong only path C. Thru e of great presiden

importance. For inclance, in most gives in dependence of part that the characteristic well as well as the control of the cont

We define a first trained in the incomment of part in stide still the part if the every performance in the first trained to part it the interest of the intere

### Theorem, 1 Jindependence of Public

A matrices (1) with the norm of  $A_1$   $A_2$   $A_3$  is comparable sequenced and the offered only  $A_1$   $A_2$   $A_3$   $A_4$   $A_4$ 

$$f = \cos 17$$

$$|\dot{z}| = \frac{\delta t}{\delta z}, \quad T_2 = \frac{\partial r}{\delta z}, \quad T_2 = \frac{\partial \dot{z}}{\partial z}$$

#### Brample 1.

In taken reneard politics to street value integral

$$\int_{\mathbb{R}^{N}} H_{N}(\tilde{\sigma}) = -\int_{\mathbb{R}^{N}} \left[ 2 \chi (g + 2) 4 \tilde{\sigma} v + 2 \tilde{\sigma} v \tilde{\sigma} v \right]$$

is the Harris point nary compare suggested find a value of the line risk point A(0,0) and defining sort B(2|2,2)

#### Solution:

By repection we find that

$$f = \int d^3x \, d^3y \, d^3y + 2\pi i + 2\pi i + 4x i + y \log i \, i$$
  
 $x = x^2 + x^2 + 2x^2$ 

**---**

) is a more purposity of the consent by integration, as in Example 1. Set  $\star$  (That an Endow Brokes increased a configuration of the integral  $\star$  of the set Lee are confictively varieties.)

$$\mathbb{C} = \chi \hat{p} = \{0,0,0\} = \{0,+,0+\}, \quad \mathbb{C} \geq t \leq 2.$$

and gap of this property than San San San Are Brand round is

$$\int_{\mathbb{R}^{2}} ds \, \rho(m+\delta) \, \rho(t) = f(n,t) + \frac{2\pi}{n} e^{-\frac{\pi}{n}} \frac{dt}{dt} + O(\frac{2}{n} \log t) = 1.6$$

#### Proof of Theorem 1:

. The Azir-Citizen compliance of the City of Appendix Site of Site of Appendix of the Appendix Appendi

$$\chi(x) = \chi(x) + \chi(x) + \chi(x) + \chi(x) + 0 \leq x \leq 0$$

ha Baitoth an got.

$$\begin{split} \int_{-\pi}^{\pi} (G_1(t) + G_2(t) + G_2(t)) &= \frac{1}{2} \frac{\partial^2}{\partial t} \frac{\partial t}{\partial t} \left[ t_2 + \frac{\partial t}{\partial y} \partial y + \frac{\partial t}{\partial y} \partial z^2 \right] \\ &= \int_{-\pi}^{\pi} \frac{\partial^2}{\partial x} \frac{\partial t}{\partial x} \left[ t_2 + \frac{\partial t}{\partial y} \partial y + \frac{\partial t}{\partial y} \partial z^2 \right] dt \\ &= \frac{1}{2} \frac{\partial^2}{\partial x} \left[ t_2 - t_1^2 \partial y + \frac{\partial t}{\partial y} \partial y + \frac{\partial t}{\partial y} \partial y \right] \left[ t_2^2 - \frac{\partial t}{\partial y} \partial y + \frac{\partial t}{\partial y} \partial y \right] dt \\ &= \frac{1}{2} \frac{\partial^2}{\partial x} \left[ t_2 - t_1^2 \partial y + \frac{\partial t}{\partial y} \partial y + \frac{\partial t}{\partial y} \partial y \right] \left[ t_2^2 - \frac{\partial t}{\partial y} \partial y + \frac{\partial t}{\partial y} \partial y \right] dt \end{split}$$

This we wanted the riogalic amortise (if an extite solution to be keeped on the  $x^{\mu}$  ) and the first increase and the pair  $x^{\mu}$  (if

 $\lambda_{ij}$  . The converse promise this theory is all independence of an imprimental filling graphent or forms: lunction are more demand when a string group have

Тты всемо совтало в воли и съять у жер тыго свето де

$$\int_{\mathbb{R}^{2}} dx = f(x) - f(x) - f(x) = f(x) - f(x) + f(x) - f(x)$$
$$= f(x) - f($$

A , where way a scoring has a color takewidth,  $\mu$  pool of France , shown an ex-

 $T \mapsto k \times 1/m_{w, w} - com(r) \circ r + r \circ r \cdot r^{-1}$ 

$$\int_{-\pi}^{\pi} \langle r| dr = F|dr + F|d\rho\rangle + P|\rho\rangle = \langle \rho\rho\rangle + \langle \rho\rho\rangle + \langle \rho\rho + \rho\rho\rangle + \langle \rho\rho$$

sille er skaj til die ustolle mule vik Hänte megnyte prodougs

$$\int_{\mathbb{R}^{N}} f(x) \, dx = f(x) \int_{\mathbb{R}^{N}} f(x) \, dx = f(x) \int_{\mathbb$$

? Potential theory in Sink burn present discussion they came the last discussion of Fig. 3  $\pm$  1.7 Thus, is magnet (trist for parallel  $\pm$  ) of  $\pm$  3, and only not strong action of  $\mu_1$  , the right  $\pm$  3.

### Enumple 2.

36

into sandones on as in  $\mathbb{R} a \mapsto \lim_{n \to \infty} \operatorname{crip}(a) \operatorname{process}(a)$ .

Frauxis no ricq vi-

woming  $M_{\rm c}^{\rm o}$  (200)  $R_{\rm c}^{\rm o}$  (200) and absorbing the RS axis potential and popularly and integration in the Schutinn:

the first of the limit we are a past to the  $\Gamma$ 

$$f_{\rm c} = 0$$
 and  $f_{\rm c}^{\rm c}$ 

$$f_y = F_y - 2(\varphi) \qquad \qquad f_y - F_y - y$$

With the will be trop dark package notice in the lifty in Leure, or and different offers.

$$f = x^2 + (p_1 p_1/2)$$

$$2$$
  $2$   $2$   $2$   $2$ 

$$i_p = g_p + 2gr$$
,  $\Rightarrow g_p = g_p - g_{pp}$ 

$$-(-f-g(y,z))=-$$

 $\begin{array}{lll} f = g(y, Q) & \Rightarrow & f_y \in g_y^2, \ y \in \mathcal{Y}, \\ \text{Now note that we show that } f_y = \mathcal{F}, & \Rightarrow & g = \mathcal{G}(y) = \mathcal{G}_y \end{array}$ 

$$\chi(\hat{y}^{n} - \hat{y}^{n} + \hat{y}^{n}) = -\chi(\hat{y}^{n} - \hat{y}^{n}) = 0$$

$$\Rightarrow$$
 1 objects  $0 = 10^{\circ} \text{cg/s}$ 

In some size  $y : z = y^2 + y^2$  cannot be some sinear size y : z = z z z + y z z

$$J = \{0, \dots, 0, -10, \dots, 2\}, \{0 + 7\} = 0 + 23 = 0$$

## Theorem. 7 (Independence of path).

The compatibility independent of the  $\mathbb{R}^n$  and bright  $\mathbb{R}^n$  rand only into some n is the engagine n

The carrier object C and C together the C and a closed in the C sum if we integrate horself a page.  $\hat{\omega}_i$  to  $\hat{\omega}$  (as the lead contrade copy and sense is only  $\hat{\omega}_i$  denoted in Casa from this images is in a Decay.) by TC. For sum of the term  $\exp(a \sqrt{\kappa} \log a)$  belong from Stephelenging , is proportionally

Conversely account the the integral arguments of p and p . In Q is Q is zero.

6 with  $\gamma$  putting and 8 and 6 yields they 6 land  $\omega_0$  con A will A , we see Ida. Cookillation for taking payersed and companies for managesed bath or by  $0 \approx 1000$  and a strong through the strength

Let be the integrals the  $C^*$  and  $C_*$  . Constant from  $A \in \mathbb{R}_+$  we also except that success the medianers.

Calmad 167

# Work, Conservative and Nonconservative (Dissipative) Physical Systems: Fig. 11 http://doi.org/10.1001001

That in normal (a., the in Eq. ( ) (2) on the profits the work, three gradule F if the displacement of

If there exists the transfer of 2 values is a real introductable of the 1 are only in x > 0 and x > 0 and x > 0 and x > 0 are configurable of the formula of the substitution of the substitution of the x > 0 and x > 0 are configurable of the x > 0 and x > 0 are configurable of the x > 0 and x > 0 are configurable of the x > 0 and x > 0 are configurable of the x > 0 and x > 0 are configurable of the x > 0 and x > 0 are configurable of the x > 0 and x > 0 are configurable of the x > 0 and x > 0 are configurable of the x > 0 and x > 0.

If  $v_{k}$  (all, the dilettian of yold code can be storpleted as also all by attractors of constraints of the object of the constraints of the object of the constraints of the constra

Frim an interesting of any water less wind a copy and against the one of the fact translated distribution in the copy and the productive error of a cut of each copy and the least of the production of the copy and the greatest of the copy and 
Braceness and in dependence of Patholin Coronilli, relicous public dependence of Intelline integral 111.55 针点点 person and treated 19.55 in e.g. all or in a stock of accordance. A third times land traceromic belows to are publicated conductive, where exists a cold the differential lend.

$$\rho_{1}=(\frac{1}{2})(\rho+\frac{1}{2})^{2}$$

installing regularity  $\Pi(i,j)$  is the exact  $\pi(i,j)$  and  $\pi(i,j)$  and  $\pi(i,j)$ 

$$D_i = \frac{\partial f}{\partial x_i} \Delta x + \frac{\partial f}{\partial x_i} \partial y + \frac{\partial f}{\partial x_i} \partial x$$

g/gulfiguration is the company of the corrections in the High of the Adams

$$\mathbb{P}(\sigma) = \mathbb{P}_{p}\sigma \cap \mathbb{P}_{p}(\sigma) = \sqrt{2}$$

÷

ař.

Comparing the answer and a conformal fraction of person by the  $\alpha$  for  $\beta$  and  $\beta$  and  $\beta$  from all  $\alpha$  and  $\beta$  and  $\beta$  are the  $\alpha$  variety of  $\alpha$  .

$$\mu_1 = \frac{\partial \mathcal{L}}{\partial z}, \quad \Psi_1 = \frac{\mathcal{L}\mathcal{L}}{\partial z}, \quad \Psi_2 = \frac{\partial \mathcal{L}}{\partial z}$$

in vertical form it, again the  $-\gamma$  . So to 90, our convention

Indee,  $p_{g}$  in equal 1. In given g is g is a consequence of g and g is where g is a consequence g G, G, G, and it denotes g

This will a district point and account the solute of the solute of the form of the following country of the following of the

For example the interior of a sphero on a cube. To interior of a sphero +  $\pm$  171.2  $\times$  183  $\times$  1918, where  $\pm$  1912 and  $\pm$  2018 is the object of the sphero object of the sphero  $\pm$  1911 and  $\pm$  1911.

 $2.151.530\,53\,ept\,(1)$  will be attended a cube with one space diagonal consequence of a probability connected.

If the principality of the interpolation of the sequences of the following  ${\bf r}$ 

# Theorem 3 (Calcarion for wavelness and independence of path)

LM트, 팅, 링 une lovintegrati

$$\int_{\mathbb{R}^{d}} f(t) \, dt = \int_{\mathbb{R}^{d}} (f_{1}(t) - f_{2}(t) - f_{3}(t))$$

ce contribution with our less till once that partial derivatives to a partial  $n \in \mathbb{N}_{\geq 0}$  where  $n \in \mathbb{N}_{\geq 0}$  we get  $n \in \mathbb{N}_{\geq 0}$ 

- (4) This inequals independent of patriotic  $D \to v$  hous the differentiable matrix of the integral energy.
- f s.( - 5

 $\hat{t}$  ,  $\hat{s}_{i}$  that ends therefore an efficient less, these follows from our s=0, which gives

that 
$$e \, | \, \vec{r} = \begin{array}{c} -\frac{j}{2} & \frac{j}{2} & e \\ \frac{j}{2} & \frac{j}{2} & \frac{j}{2} \\ \frac{j}{2} & \frac{j}{2} & \frac{j}{2} \end{array}$$

$$2D^{2}r = r \frac{4E_{1}}{2\pi} \cdot \frac{3r_{1}^{2}}{2c} \Big[ -r \Big( \frac{3r_{2}}{2c} - \frac{dr}{dr} \Big) + r \frac{d\tilde{\sigma}_{2}}{dr} - \frac{4E_{1}}{2r_{2}} + C$$

$$\chi^{*} = \frac{\partial \hat{h}_{1}}{\partial p} = \frac{\partial \hat{h}_{2}}{\partial p} = \frac{\partial \hat{h}_{2}}{\partial p} = \frac{\partial \hat{h}_{3}}{\partial p} = \frac{\partial \hat{h}_{3}}{\partial p} = \frac{\partial \hat{h}_{3}}{\partial p} = \frac{\partial \hat{h}_{3}}{\partial p}$$

(c) if (0) including an LCG- simply connected. That the inequality is integer, and also in  $\Omega$ 

Figure:

- (a) If the training of inflict dependent a path of Quarter  $E=\{(a,b)\}_{b} \times \{a,b\}$  , and  $C=\{a,b\}$  gives b=0 . So that  $\{b\} \in H_b$
- (3) The production consensuring maximizers  $\epsilon$  , equalificate is omitted from

Comment file a little jougetal mond plant.

 $\mathcal{M} \in \mathbb{N}^{2}$  as just one component are (6). We have to the single relation  $\mathcal{M}$ 

$$\frac{\partial C_{\overline{b}}}{\partial t} = \frac{\partial C}{\partial x}$$

## Examples

Exactives and independent and that it occurrences also as as is using (also are shallow with explicit communication for any other), all

$$\mathbb{E} = \int_{\mathbb{R}^n} \left| 2\pi e^{i\theta} d\theta + e^{i\theta} d\theta + 2\cos\theta d\theta d\theta \right| + 2\theta^2 (\theta - \theta) \sin\theta d\theta d\theta \right|$$

z exacts so that we have impose length of proportions the thing the value of them A (0.1). The subliness:

### Schenlan:

Exact cashed over from (6), which prices

$$\begin{aligned} & (\Gamma_1)_{p} = 2 \Gamma_1 + \cos k x - i x \sin k x + (\Gamma_2)_1 \\ & (F_{1p} = \log (x - (r_2))_1 \\ & (F_2)_1 = 2 (x^2 - F_1)_1 \end{aligned}$$

There is well regards  $F_i$  refride is florigifus strative payerbore) and then dilitimatisks  $x_i$  and where  $F_i$  and  $F_i$ 

go lije. Takin ji u 10, celil ake

$$|||(x,y,z)|| = ||\mathcal{S}y|^{\frac{1}{2}} + |x| + yz.$$

- and this the (3) walget (-1) = 3 (4) (5)

$$= (0.540, 0.000, 0.000, 0.000, 0.000)$$

The agrange of  $\mu$  Theorem of resp. Diggs of  $\mu$  , the entermise and accommodate conflicts.

#### 2.14.21 Green's Theorem in the Plane

Bounds (lagrated set a planetegic) in eyitle its sistement its interest; no continuous despondences or set as we say. This so the action rise of a section from the promote free value or other integers when the following the promote continuous despondences or integers with a continuous of the set of a 2004-000 date of the location of the continuous of the set of a 2004-000 date of the location of the continuous of the set of t

#### Theorem, 1 (Green's Theorem in The Plane)

(Tigate) in latinal respective that the observable in the program)

A Global kwaling intrating for (and work 0.3) in the wypton whose boundary Counsists of Cintery of wish curved from Eq. (a) the different cash became continuous and leave on the continuous Additional Emerge and  $\frac{3e_{\mu\nu}}{3e_{\mu\nu}}$  and  $\frac{3e_{\mu\nu}}{3e_{\mu\nu}}$  are the dimensional familiar and help  $e^{\mu\nu}$  from  $\frac{3e_{\mu\nu}}{3e_{\mu\nu}}$  are the dimensional familiar and help  $e^{\mu\nu}$  from

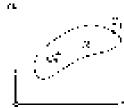
$$\label{eq:continuous_problem} \int_{\mathbb{R}^{N}} \prod_{i=1}^{N} \frac{\partial F_{i}}{\partial x^{i}} \left[ \partial_{x} G_{i} + \partial_{y} G_{i} + \partial_{y} G_{i} + \partial_{y} G_{i} + \partial_{y} G_{i} \right] dy = 0.$$

Fingles Rivings country yis Coensisted No. parts (i.e.  $\pi_{2}$ -cross) country a cokerse while  $C_{1}$  a  $\pi_{2}$ -cross a upplying, so that  $N(s,t) \in \mathbb{N}$  be we advance.

Comment, Epopole, 11 garage wither a web invelored

$$\label{eq:conditional} \mathcal{D}_{i} = \iint (\operatorname{cond} f_{i}) \, \operatorname{disc} \sup_{i \in \mathcal{F}_{i}} \int \operatorname{cond} f_{i} \, \mathcal{F}_{i} \,$$

The relative property last, that are three puriper employed Gi-  $\frac{\partial P_0}{\partial x} = \frac{\partial P_0}{\partial y}$ 



#### trample.

### Verification of Green's theorem in the plane.

Production of the two-extremental parameter of the production  $\mathcal{A}_{i}$  . Both a proving  $I_{i}$  and  $I_{i}$  gradient We denote by the property of  $F_{c}=g^{2}+7\pi/F_{c}$  . Signify the G . It is probable by G

#### Solution:

in then the letting  $a_{ij}$ 

$$\iint_{\Omega} \left( \frac{\partial F_{k}}{\partial x} + \frac{\partial G_{k}}{\partial y} \right) dy dy = \iint_{\Omega} \left[ \frac{\partial}{\partial y} (y + y) - (y + y + y) (y + y) \right] dy dy = 0$$
So the big of the proof of disk empty agree at the contract of the proof of the p

Or the right on the proposition to observe that in  $\mathbf{H}_{\mathbf{x}}$  is exactly by

Unit word is obtain.

1 -:: -

$$\begin{aligned} F_{ij}^{\prime} &= 80.15 + \overline{5} \cdot 60.5 \\ F_{ij} &= 8.000 \cdot 800 \cdot 5 + 8.00 \cdot 6. \end{aligned}$$

 $\mathbb{H}^{q} : \mathbb{H}^{q} \mapsto \mathbb{H}^{q} \oplus \mathbb{H}^{q} \otimes \mathbb{H}^{q} \cap \mathbb{H}^{q} \oplus \mathbb{H}^{q} \oplus \mathbb{H}^{q} \oplus \mathbb{H}^{q} \oplus \mathbb{H}^{q}$ 

$$\int_{\mathbb{R}}\theta(x')dx'dY' = \int_{0}^{x}(18n^2) - 7\sin(\theta')\sin(\theta') \cdot 2\cos(\theta') + \cos(\theta')\cos(\theta')\cos(\theta')dx$$
$$= 0 - 2\pi - 3\pi$$
 Substantial Property of the state

# 2.16.22Triple integrals: Divergence Theorem of Gauss

In this pechanical first  $(x,y) \models y + y \ne 0$  when the model (y,y) = 0 in Equation 5. Sicilation tegra virus. De mourais brokenta Grissa si olvanjanda hemen de suse il no keel le diverate de of a vector function

In 25:00 Clay to 6 significal zeros of improvible magraph or commission afford we not also in increase  $\{r_{i,j}\}$  ) satisfy a substituted description  $T_{i,j}$  where  $W_{i,j}$  is the sequence of the sign of  $S_{i,j}$  by proposition  $S_{i,j}$  is the sequence of the sequence of  $S_{i,j}$  and  $S_{i,j}$  is the sequence of  $S_{i,j}$  and  $S_{i,j}$  and  $S_{i,j}$  is the sequence of  $S_{i,j}$  and  $S_{i,j}$  and  $S_{i,j}$  is the sequence of  $S_{i,j}$  and  $S_{i,j}$  and  $S_{i,j}$  $\texttt{potable form}(\texttt{figure}) : \texttt{i.e.} \in \texttt{posted}(\texttt{four those power of supply for a paragraph as the \texttt{period} \texttt{i.e.} \texttt{i.e.})$ in the face numbered filter, in fact and then when see an argulative  $p_{ij}(S_{ij}, p_{ij}, p_{j})$  in power to far first 6 0

$$1 = \sum_{i=1}^{n} \delta(a_i \beta_{ji} z_i) \Delta a_i^2$$

while G is the volume of executions we according country agents after magazinate given by  $g_{G}$  so that In the most language of the a g e e e g e h by the approaches zero as a participant of the e the g was a $(H) \mapsto (H \circ f) \text{ as removed } (g_{ij}, h_{ij}, h_{ij}) \text{ for a finite } (H \circ f) \text{ if a continuous } \text{ is even an economic of any } f \in \mathcal{F}_{ij}$ Let upon the limit  $\gamma$  matrix smooth such as  $\gamma$  (see Fig. 3.8). They is combastic expression for  $\gamma$  to proportion to  $\gamma$  at TA 200 (CDSA A uvergez la la multifra) la independent contro chaixe la subbisión a lan la priexa del la lockida  $\hat{V}(x,y,|x_0)$  . Thus, in the constant of the period  $\{y,y,y\}$  over the region x and is constantly

$$\coprod_{i \in \mathcal{I}} \mathcal{I}_{i, n} \otimes_{\mathcal{I}} \mathcal{I}_{i} \mathcal{O} \otimes_{\mathcal{I}} \mathcal{O}^{(n)} \otimes_{\mathcal{I}} = \coprod_{i \in \mathcal{I}} \mathcal{I}_{i, n} \otimes_{\mathcal{I}} \mathcal{I}_{i} \mathcal{O} \otimes_{\mathcal{I}} \mathcal{O}^{(n)}$$

To plant taggets can be distributed from the energy as well require  $p_{ij}$  and  $p_{ij}$  to  $p_{ij}$  and  $p_{ij}$  and  $p_{ij}$ programme two are inveized degraphics.

## 2.14.22.1 Diversionice Theorem of Gaussi

lingly inleg a signification and recognized in larger larged countries be, redering to the one region in specie and i constantly  $\mathbb{N} \times \mathbb{N} \cap \mathbb{C}_{\mathbb{R}^n}$  such the electric conditions and integral solitons in  $\mathbb{R}^n$  by the  $\mathbb{N}$ 

If a conclusion establishing turban with the equations of profit x is a figure with x , which is not a non-normalizable x, the profit x is x and the profit x is a perfect of the conclusion x and y is y. The y is y is y is y is y in y is y.

1 
$$g(x) = \frac{\partial E}{\partial x} + \frac{\partial E}{\partial x} + \frac{\partial E}{\partial x}$$
 Since 2.10.

## Theorem, 1 (Divergence Theorem of Gauss)

ijga signi gjardensgan sai mei merekka olivnikasi haqibad

Let T be a proved the matter of the provided A and A are the provided A and A are the A and A are the A are the A and A are the 
$$\mathcal{P} = - \prod_{i \in \mathcal{I}} g(x_i) | g(x_i) = \iint \mathcal{P}_{\mathcal{I}} \pi_i(X_i)$$

where r is the r-less influence we contain approximation to exact the  $r \in \mathbb{F}_2$  . While the multiplication demonstrates  $r \in \mathbb{F}_2$  . We have  $r \in \mathbb{F}_2$  . Where  $r \in \mathbb{F}_2$  is the  $r \in \mathbb{F}_2$  . Where  $r \in \mathbb{F}_2$  is the  $r \in \mathbb{F}_2$  .

$$\begin{split} 2^{2} &= \iiint_{q} \left( \frac{2E}{\omega_{0}} + \frac{\partial \beta_{0}}{\partial \beta_{0}} + \frac{\partial \beta_{0}}{\partial \omega_{0}} \right) \cos(2\gamma) \, d\beta \\ &= - \iiint_{q} \left( \frac{2E}{\omega_{0}} + \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{\partial \beta_{0}}{\partial \omega_{0}} \right) \cos(2\gamma) + \left( \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_{0}}{\partial \omega_{0}} + \frac{1}{2} \cos(2\gamma) \right) d\beta \\ &= - \left( \iint_{q} \left( \frac{\partial \beta_$$

. Hijatin 2: kyenahawellanca

$$3 = \frac{1}{\sqrt{2}} \left[ \frac{d^2 C + d C_1}{d r} + \frac{d C_2}{d p} \right] \cos d b \cdot d z = \frac{1}{2} \left( E \cdot \partial \rho \partial \sigma r + E \partial r \partial \phi - C_2 \partial \phi \partial \rho \right)$$

#### Example:

Post offer mais itseed placest by the divergence theorem

Epitotowe prove the divergence integrals, let us at  $v \in S_{k}(i,s)$  which will be  $v \in S_{k}$  integral by a case

$$f \leftarrow \prod_{i \in \mathcal{I}} g_i v^2 \mathcal{O}(g_i + g_i^2) \cdot 2g_i \mathcal{O}(g_i + g_i^2) \cdot e^{ig_i \cdot g_i^2})$$

where S is the observable consisting of the cylinder  $S=\chi^2+4^2$  ( $0\leq 2\leq 6$  and the orbital circles are S=0 and S=0 ( $0\leq 2\leq 6$ ).

#### Solunian:

и Истычковаче

$$\begin{split} F_1 &= \langle \hat{x}^2, F_1 - \hat{x}^2, F_2 - \hat{x}^2, F_3 \rangle \\ & \text{old} \, F_1 = \langle \hat{x}^2, F_2 - \hat{x}^2, F_3 \rangle = \langle \hat{x}^2, F_3 \rangle \end{split}$$

-00 90

**introducing polar abordinates**  $\eta$  0 pointed by x = y by 0 > 0 > 0 (thus, by partial bound rouse  $\eta$  0  $\mathbb{Z}_p$  with  $x \in \mathcal{C}$  and 0 = x or  $d \in \mathbb{R}_p$  (three libers).

$$\begin{split} & \Gamma = - \prod_{i \in I} \operatorname{Spl}^{i} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \\ & = - \operatorname{Spl}^{i} \prod_{i = 1}^{N} \operatorname{Spl}^{i} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \\ & = - \operatorname{Spl}^{i} \prod_{i = 1}^{N} \operatorname{Spl}^{i} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \operatorname{Opt} \\ & = - \operatorname{Spl}^{i} \prod_{i = 1}^{N} \operatorname{Spl}^{i} \operatorname{Opt} \operatorname{Opt$$

### 2,14,22,2 540kcs's Theorem

Heri green his grout accumate of Paulo affindme, Heri evil in the separation of the green in pag covered, Vickes's terms of the usus onto incomparation according was not be two key Herica in subspicing generalizes to be for local and hims, separations are proportional as to be subspicing to the second control of the second contr



Redict Discourse

## Theorem, 1 [Sinkes/Theorem]

ransformation activity is a fix as integrate year the integrale

ed à politipocate simplification la réale in Russe, au tileptie george de à pela discourse a rechte il produce purve à Lac Helly Ajacou den manieure de fong en Jiet legating public par 570 à Chiketives de den au mapage conforming à Thom

$$2 = \frac{1}{2} \int_{\mathbb{R}^{3}} dx \, \nabla x \, \nabla y \, dy = \int_{\mathbb{R}^{3}} dx \, \mathcal{L}(0.125)$$

where it we up a termological control and incomplete and incomplete view of the symmetries generally and the source of the symmetry of the superson and the symmetry of the sy

$$\begin{split} \phi &= \iint_{\mathcal{S}} \left| \left[ \frac{\partial F_{ij}}{\partial t} + \frac{\partial F_{ij}}{\partial \mathcal{F}} \right] S_{ij} - \left( \frac{\partial F_{ij}}{\partial x} - \frac{\partial F_{ij}}{\partial x} \right) S_{ij} - \left( \frac{\partial F_{ij}}{\partial x} - \frac{\partial F_{ij}}{\partial y} \right) F_{ij} \right| dx_i + S_{ij} \\ &= -\left( \frac{\partial}{\partial x} \left( \nabla F_{ij} \partial x + \nabla_{ij} \partial x_j \right) \nabla F_{ij} \right) S_{ij} + C_{ij} \partial x_j \right| dx_i + S_{ij} \end{split}$$

Where G is the region with optimization of the first options for a quartic g is G to a sectional by  $\mathbb{R}[g]$  . If  $G = \{g_1, g_2, g_3, g_4\} = g_1 \in g_2$ 

## Ekample 1.

#### Verification of States is the norm

Below stocking Blows stocks multiplicate the socially verifying into  $v = [y, z, y] y + z = y z z z \otimes \pm c$  , associate

$$z = ((x, y) = 1 \cdot (y^{-1}; x^{2}), z \geq 0.$$

#### Solution:

The output C is the click  $f(z) = \{ (1, 2, 2, 3) | x \in C \} = \sup_{x \in C} g(x) | x \in C \text{ so the critical properties for } f(x) = [2\pi i, x, 3\cos x, 0] = 1 \text{ this } x \cos x \in C \text{ Consequently. The line is the problem of the critical problem.}$ 

$$\widehat{\Phi}_{\mathbf{x}}(\mathbf{r}, |\mathbf{x}'| = \int_{\mathbf{r}}^{2\pi} (\mathbf{r}(\mathbf{x}) |\mathbf{x}(\mathbf{r}, \mathbf{x}) \cdot \mathbf{r}(\mathbf{r}, \mathbf{x}) \cdot \mathbf{r}(\mathbf{r}, \mathbf{x}) \cdot \mathbf{r}(\mathbf{r}, \mathbf{x}) = 0$$

United that in this in (2) or the Lyther ledgity only this is

$$A_{i}(x) = [-1, -1, -1]$$

$$A_{i}(x) = \{0, 0\} (x + (x + 0)) = \{0, 0\}, \{0, 1\}$$

$$\iint_{\mathbb{R}} |f(x)| f(x) dx dx = \iint_{\mathbb{R}} (-2x + 2y + 1) dx dy$$



Bullius Sin Basing 1

$$= \iint_{\Omega} \left( -2 (|\Delta Y_{1}|^{2} + 2 (|\Delta Y_{2}|^{2})^{2}) - (|Y_{1}|^{2} \Delta Y_{2}|^{2} \right) d\theta$$

of energy account p=1 and p=1 is 0, 0, and 0. We obtain spectral Gold Signar approach p and in some parameters of 0 and 0 and 0 and 0 and 0 and 0 are specified by 0 and 0 and 0 are specified by 0 are specified by 0 and 0 are specified by 0

#### Esample 2.

## Green's theorem in the plane as a special case of Stokes's theorem.

Let t = 0 by f = 0 page a value function that is so that eacy of the excise F in a normalization F page F is a constraint of the excisence of the excisence of the excisence of the excisence of F and F in a case of explaining F.

(a trib (a) = 
$$\{\cot \theta\}$$
 )  $\theta = \frac{\sqrt{2}}{6\pi} + \frac{\sqrt{2}}{6\pi}$ 

#### Solution:

Hence are form to in post as theorets held to call he form

$$\iint_{\mathbb{R}^{N}} \frac{\partial \mathcal{D}}{\partial x} dx = \oint_{\mathbb{R}^{N}} \partial x \cdot \partial_{x} \partial x.$$

The same of Cheen sheet at  $\alpha$  the times are specific topic of 210-case floorers.



# Previous GATE and RAE Questions

- $\mathbb{Q}[1] = \underbrace{\mathbb{Q}_{n-\gamma}^{(p+1)}}_{n-\gamma} = \operatorname{sectable}$ 
  - w n
- 11 w
- 1 e. .
- (3: 1
- 1M±, GASE-2003.1 mark].
- O.2. If a (Apro First in Notice Heaving Well maker) (5.4% +1) (1.6% 4) (2.1% 25m 35 A sector, then the order conforce of the OARS (Uniting The organization conforce).
  - 341.3
- (l 5
- 1::1
- re) J
- (SE GAIF-2006 1 Malk)
- Q.3. The value of the function  $\pi_{k}(-1)_{0} \frac{x^{2}-x^{2}}{x^{2}}$  is
  - ia; .:
- និង 🕺
- (c) +
- *i*:†| ~
- [CF, EATF-2004, 1] mark]
- 62.4 5 = 4.00 + 80.00 + 40.5 = 8.01 + 90.800, 0000 + 6.00 + 8.000 = 8.000
  - $\gcd[|sr|]^{\frac{j^k}{2}}$
- $(x)\mapsto x_1^2\frac{5}{2}$
- $\hat{g} = \nabla \Gamma \Big[ \frac{\hat{g}^{*}}{\hat{g}} \Big]$

ME\_GATE-2004, 1\_mark)

- $\Sigma$  is the function  $\eta(z) = 2z^3 + 3z^2 + 36z + 3z \log \eta(z)$  (0.5) = 2z
  - [s] x = -2 only
- u(t) = 0 only
- $(0) \times \mathbb{R} \otimes \mathbb{R}^{n}$
- $m^{2} \operatorname{sch}(\mathbf{x}) = 2 + n(\mathbf{x} + \gamma)$
- (CE, CATC-2024, 2 marke).
- 5.6 The wild melotic library consists in some saturation of the second section of the second seco
  - $V = \frac{2\pi}{10^{-3}} \frac{(2.3)^4}{6} \frac{(2.3)^4$
  - $f = \frac{\pi}{2}$
- 000
- ;:. <del>≟</del>π
- 66

ME\_GATE-2004, 2 marks)

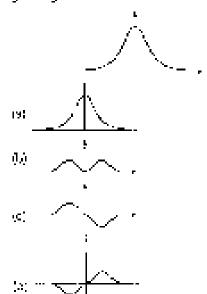
Q.7 The single between two ununiquated coplanar values of \$10.868, 0.500, (gen).

(#0.989, 0.998, 0) A Loc

- (2) 0
- [#] X.\*
- 150 fb-
- 00 50°

[ME, 0ATG-2004, 1 mark]

- Q.9 A remongrid accolorates from its operanally pool of in Bioperand and invested a listen with 260 in Argue Big. a. A Vested Vested Industrial III of Special Industrial III a contain limb distinction of accomplishment of the Argue III of Special III of Special III.
  - (2)
- goi Changh
- 0:75k p.
- (4) 128 km) . [DE-GME 2008-2 marks
- 2.8 The reduction of test an ethic burgar assuming the figure of the effect.



[FC. GATE-2005, 2 majes]

- O.32 The fightermust conditionages values. Twick in the problems of a ophere of 1 m radius had in the group.
  - JK) 7/30
- 3. Nac
- $\omega = 2\sqrt{p}$
- 303.0310

[VL, GAIL 2005, 5 marks]

O.	. For the function $f(\rho)\neq e^{2}$ of , the maximum sector
	refrents to equal to

0.0

i n

Ee, SA ie 2005, 2 marks).

$$0.78 \pm 3 \, \mathrm{m}^{11} \mathrm{gal}$$
 on the ones the value

120 178

| (9) 124 | 13: 1 | [FE GATE-2005, 1 mork]

Q 15 (filter) i gåre is let til her teg dövt i 1500 tödd.

when 
$$z=-F-rac{3}{4}\frac{8}{4}\phi_{s}$$
,  $\sqrt{m}z^{2}$  , leads to

 $2 = \prod_{i \in \mathcal{I}} (i, i, i) \operatorname{char}(y_i) \text{ for an } (i, y_i)$ 

(g) 43 5 - 2

[ME, 37] E 2005, Thiark<sup>†</sup>

**O**.14. By a change of wallactors for  $\hat{A} = 0$  at  $\hat{A} = 0$ .  $x_i(x_i)$ yai aya Lainaya:  $f(x_i)$  $f(x_i)$  $f(x_i)$ 

Let  $\theta$  be the Left (x,y) . Then, x(x,y) is

100 5 350

12:22:50

10)

[MII. CATE-2005, 2 marke]

 $\Omega$  15. For the near modifier  $\frac{\beta}{\beta} + \frac{\beta^2}{\beta}$  , magnitude of

regionario sartiji, Silt

 $\lim_{n \to \infty} \frac{1}{n} = \lim_{n \to \infty} \frac{1}{n}$ 

 $\mathbf{E}(1,\sqrt{2})$ 

'EE, GATE-2005, 2 marks

Q 18 Thr. line limegral  $-9\,\%$  at the vector  $|V_{ij}|^2 = 2 \log n^2 + \sqrt{n^2 + n^2} + 2 \log n^2$  from the rought to break control 1. 6.

(a) y 1

(all selections)

:::1 5 I

(c) connected determined without specifying dail. [ME, GATE-2005, 2 merks). |0.17| value of indirectors |90y(0)| = 2.025 , where,  $\alpha \approx$ she double out from the lifet observed level  $m{+}$   $m{i}$   $m{+}$   $m{i}$   $m{+}$   $m{i}$   $m{+}$   $m{i}$  $\omega = 1 \exp (y - 1) \text{ of } 1 + 1 \text{ set Considerate to}$ 

DE, 3A is 2005 2 harks].

Our B. Walkhalane gram connects.

natia tino pegara la late alettada i cercali. i) λίας alla με i tegorismo - sal tino mog a  $\hat{\phi} \rightarrow \hat{\phi} \in (0.55)$  and a column ries of (ii) quadient or a rung; en en alle surtaba no gradi

(MF, CATE-2006, 1 mork).

$$\mathbf{Q}_{i}(\mathbf{0}, \mathbf{0}, \mathbf{0}) = \frac{2x^{2} - 7x + 3}{4x^{2} - 12x - 9}$$
 and  $\lim_{t \to \infty} q_{i}(\mathbf{w})$  be

. 5 ()

22, 22,

[[Me, tANTL 2008, 2 marks]]

 $(0.22~{\rm As})_{\rm A}$  juggested from  $-\infty$  to  $\infty$ , the block of

$$P_{i,i,j} = \frac{C^{*}}{1 - 2C}$$

 $\frac{1}{2}$  in the strong about 2000  $^{\circ}$ 

(a) a to write daily decreases.

(by noreacce to a play the waller and their

 $(g_{\mu},g_{\mu}g_{\mu})$  and  $g_{\mu}(g_{\mu})$  and  $g_{\mu}(g_{\mu})$ 27 AM W.

[50] GATC-2008, Pilnerks]

. If 21  $\delta$  is in in  $p \in \sqrt{10}$  and  $\delta$  acres where  $\int_{0}^{\pi/2} d^3 d^3$ 

 $100 \cdot \frac{\sqrt{3}}{2} + 3\frac{1}{2} = -100 \cdot \frac{\sqrt{7}}{2} = 6\frac{1}{9}$ 

 $|g(x)| \leq e^{-1} \left(\frac{\sqrt{2}}{2}\right)^{\frac{1}{2}} \qquad |g(x)| \leq e^{-1} \left(1 + \frac{\sqrt{2}}{2}\right)^{\frac{1}{2}}$ 

$$0.79 \text{ Takineje} \int\limits_{0}^{\infty} g(\hat{\theta}) d\theta \ll g \log n \log$$

- $(\mathcal{O}_{i}^{k})^{-1}/2$
- kt 40.
- ::: 3/2

[EC. SATE-2006, 2 marks].

CLSS Whatfarm and Samma intreproject a gaging  $z = 2a \cos 6Y$ 

- (80 U.321 a.)
- 15) 0.5 (4 pt
- 6010791
- (a) 1.245 a1

[CB, GATE-2006, 2 marks]

Q.224. The expression  $V = \int_0^R e^{i\Omega t} dt = N(H)^2 \sqrt{2} f(t)$ , He мили в «Ма сопеть ордо то

$$\lesssim \int_0^1 \!\! x \mathcal{E} \left(1/2 / \mathcal{P}\right) \, ds$$

$$\langle \alpha \rangle \int_0^{R} e^{i\omega t} \left(1 - 2 \cdot H_0^2 \right) dt$$

$$\langle \phi_{ij}\rangle \langle (3\pi e) - i/\delta ) d^2$$

$$(2C \cdot \frac{1}{2} \operatorname{fer} A) = \frac{1}{2} \frac{\widetilde{\Gamma}}{2} A^{2}$$

TEL GA ∈ 2005, 2 marks).

0.25 A of the  $Six_1Y = y_1$  by 0.25 probability. once each olds for each  $\eta(z)$  ,  $\phi(y)_{ij}(z)$  ,  $\phi(z)$ salide  $u + 1e^2 + (e^{-1})^2 + \sqrt{e} + 7 = 0$   $_{\rm color}$  eavsi alestic

- 20, 3582
- $(3) \ \frac{\sqrt{2}}{\sqrt{2}}$
- 0.5%

[EE. GATF-2006, 2 mg/kg].

Q.28 The prostons derividy on

$$f(x, y, z) = 2x^2 + 8x^2 = -2$$

 $\sigma(n_i) \circ i \circ \Omega(1,1,0)$  . With restant orthogonalist

- $z=z\in \mathcal{D}(a,b)$
- Di 2.......
- 601 9 15
- العمالية -- (أر)
- edi 1000

[CL, GAIE 2006, 3 marks].

2027 housing of that he had relied by client

- $2(1 + 1) \cdot 3(\frac{3}{2} + 1) \cdot 2(0 + 5) = 0$
- (a)/(c-2x-c)
- (31/y 3z 5)
- (0,0) = x + 25.
- (d(3)) = -5

(ME. SATE 2006, 8 marks)

© 28 MorPorFill who at the election disequal to

$$(2) \cdot D \stackrel{\times}{\sim} \nabla \stackrel{\times}{\sim} D = \nabla^2 P + (2) \cdot \nabla^2 D + \nabla \left(\nabla \times D\right)$$

- $(|\alpha| \cdot \sqrt{2} \alpha_{1}) \cdot \sqrt{2} \times \Omega \qquad \qquad (|\alpha| \cdot \sqrt{2} \sqrt{2} \alpha_{1} + \sqrt{2} \alpha_{2})$

[LC GAR 2000 Thank)

Q.20 [[(회교육)자: of eldin elevation, sideballat

- $(\omega) | \hat{\mathcal{L}} \mathcal{L}(\omega) = (\omega) | \hat{\Phi}_{\mathcal{L}(\omega) \otimes \mathcal{L}(\omega)} | \hat{\mathcal{L}}(\omega) = (\omega) | \hat{\Phi}_{\mathcal{L}(\omega) \otimes \mathcal{L}(\omega)} | \hat{\mathcal{L}}(\omega) = (\omega) | \hat{\mathcal{L}(\omega) = (\omega) | \hat{\mathcal{L}}(\omega) = (\omega) | \hat{\mathcal{$
- $\langle \psi^{*} | \oint \sigma \cdot P_{A} \, d\tau \qquad (2) \, \iiint \varphi_{A} \, H_{Q} \psi$

[00, GM 0 8000, 1 mark]

- (6) 155

MF\_GATE-2007, 2 merke)

 $Q_{i}(t) = \lim_{k \to 0} \frac{\sin(Q_{i}^{k}(t))}{t_{i}} dt$ 

- 60 E. c
- $(a) \geq 1$
- (a) not dealered.

FEC. GATE-2007, 1 markii

 $5.32 \pm 0.00$  m while all largest y = y' + y' = y'nia wili 1,6 lb.

- (2) U
- ıb.
- 29 五
- (d) undernoci

[ME, GATE-2007, 7 mark]

0.33 éirt march le la avoir libraine vigitigle. pauroca?.

- 131 134<sup>3</sup>
- 163 25
- فيحق بود

(ES, GAIE 2007, Timork).

Q.34 Curisiden it is function  $f(x) = x^2 + x + 3$ . That in Awar our learner of fire) in the gargest interval 4, 41 (2)

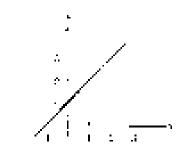
- (年) 8
- (F5 13)
- 0. 245
- rick in determination

[EC, GATE-2007, 2 inerks]

- $22.33 \pm 98$  , 14.5 up to -6.5 the linear approximation. espund x = 2.15
  - $(2) (0 x)e^{-x}$
  - y = 1 y
  - $(0) \ 0 \ 0.02 \ (0 \ 0.004) e^{-5}$
  - (a) 6%

[ES, GATE-2007, 1 mark]

QU6 if wild owns plots was a facilities we on earliest notice element the leading of the integral.



- (a) G
- iLo Zilo
- ::140
- 前的复数
- "FO, CATE-2007, 1 grank"
- 0.37 The absolution glocomed by the 3.04 vectors s. ō ar cipis

$$(\mathbf{a})^{-\frac{1}{2}} \left( \overline{\sigma} - \overline{\sigma} \right) \cdot \left( \overline{\sigma} - \overline{\sigma} \right) \cdot (\overline{\sigma}) = \frac{1}{2} \left( \overline{\mathbf{a}} - \overline{D} \right) \times \left( \overline{\sigma} - \overline{\sigma} \right)$$

- $\langle z; -\frac{1}{2} \nabla \cdot v \cdot \nabla \rangle = -(4\pi \sqrt{(a \times b)}) c$

ME GATE-2007 Pinarks).

Q.39 fler mend grob two vectors in t.5 dimensional. \$50000 400 km, vs. periode I bin del production from

The determinant dist
$$\begin{vmatrix} x_1, ..., x_n & -ix_n y_n x_n \\ x_n y_n x_n & x_n y_n x_n \end{vmatrix}$$

- (2) 1970 Cwf abox on yaz sinsa yn dependent.
- (b) is positive when the entiry graining gray. it decondent.
- C) is the energy for all non-zero stand wi
- 20) 2010 (Automorphise in eithropy only its sero)

[FF: CATE-2007, 8 marks]

$$\overline{V} = \delta \sin^2 \theta + g^2 (-2) \sin^2 \theta$$
 (and very  $\theta \approx 0$ ) is

- veloprovapile an/4 in in 34
- e =
- . . 1
  - 10E, 0ATC-2007, 2 marks t
- Quadi Patenda Line Son i la que resemblo y la 1/2, sego: Mill Costo Stream function (o) with the condition  $\psi = 0$  where  $\psi = \mathbb{C}^{2}$ 
  - (an Pry
- $(L)(x^2 y^2)$  $f_{i}(f_{i}) \leq v^{-1} e^{i \tau}$
- 131 x2 x x2
- [OF, GATF-2007, 2 marks]

$$Q(A^*,T) = \operatorname{Val}(\varrho_{\mathcal{M}}) \left( \lim_{n \to \infty} \frac{1^{n}}{1 + 1} \frac{e^n}{(n - \varrho)^n} \right)$$

ME Ghill-Stiff, Markin

$$2.42 \cdot \inf_{x \to +\infty} \frac{x - x_{M,1}}{\cos x} + \mu_{M,2}$$

- [28] GA E-2008, 1 mark).
- $0.43 \odot 4 \text{ substitutes } 0.0 = 0.1 \cdot 40 \text{ substitutes }$ with earth embedying (gridge).
  - (c) only and in a number of any will strong
  - 15) three minimal
- Att time making
- [EE\_GALE-2008, 2 marks]
- Out-4 April Court media will propaga garengan ng any local mamman or a local maximum. The number of alsthod externs to the character  $2e^{-1} - 96e^2 + 2ne^2 + 37 - 6$ 
  - :úi 0
- 101.2
- 28, 8415-2008 Pinarks]
- QM5 to the two or coned expansion of \$4 thout 4 = \$1. the  $s = \widetilde{n} \circ er(|j|) (j - 2)^4 \circ$ 
  - ic; 41
- 用在名字
- 10. (\*4.4)
- Irin 2574

[ME, SAIE 2008, 1 mark]

- $Q(\Delta g)$  we promitted a binary constraint would have only at a case to some or its law of constraint water the point x=0
  - or uno "
- (g. sinted)
- 101 995 (4.0)
- 11 1 5 17

JEC GA 9 2006 Timbrid.

- $\mathbb{Q}[47]$  . In a local corresponds to all exp(d) is an all about the ipper  $t_0=\pi$  , the isometric at the  $t_0$ 
  - ja kalis (a) seeta)
- $-(2) \cdot 0.6 \text{ Material}$
- (at Sept.), and

[LC: SATE-2006, 2 market]

- $\square |4B| |Cel| f = (f, weather <math>\frac{4f}{4M0} |8l| v = 2f f^{-1/2}.$   $\square |A| f = -\frac{1}{2} (f + \frac{3}{2} f +$ 
  - : 0.1 (2) <del>1</del>12

[MF\_CATE-2009, 2 mnrks]

QM8 White infresholds are Empire als informact if

Q 50. The length of the curve  $v = \frac{2}{J} \tilde{x}^{(t)}$  below:

- arrain = 1 is
- $\{g_{ij}^{(i)}, G_{ij}(g)\}$
- 100 U XX
- . . .

[MR, SAIE 2009, Simalks]

O 51 The value of the integral of the function  $g(x,y) = xx^2 + 0x^3 + 0xy$ , to shall  $x \in S$  segment that the point x

- 301.75
- (ar Si
- ाः य
- (d: 3)

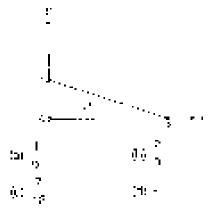
[CC\_CATC-2003, 2 marks].

2.52 Пею1—(1 ° (2 г. г.) пили х

- 41 15E
- H 5 27 C
- \*\*\* <u>15.5</u>
- 100 540

[Cu, GMID:2006\_2 marks].

C.55 Completing analysis say (or legic 124 de 1.5 Tio Latin Mila 13 - € 1245)



(ME, SA in Book Elmarks)

 $\Omega(\Delta t)$  from all (2000 products of lower of factors) is noted in early a trace of the average  $\omega$ 

- In a root woold  $\mathbf{s}_i$   $\mathbf{s}_i$
- řet di Lau S0
- 10, 39
- -3.008

SE, 37/1 2008 2 marks]

Q so The in varightry follows by documents up a

- $(y-y)^{\frac{1}{2}}+\left(y-y^{\frac{1}{2}}\right)^{\frac{1}{2}}+(y-y)^{\frac{1}{2}}\leq 2$
- tar Si
- ξú
- In the
- (fit e National

TMF GATE-2009, mark)

2.58 Thin final on a derivative of the stable function  $dy(y):= (1-2)^{2} \cdot (1+1)^{2} \cdot (1+1)^{2} \cdot (1+1)^{2}$ 

- the direction of the vector  $\bar{q} = 3$ . (4) (2)
- $|\cdot \cdot|_{F_i'}$
- ja: 2
- ic:
- [.e; 1

[ME, 0,475-2006, 2 marks].

2.67 Condition prime Plan I C in the Lizabland with A = 0.07 and B = (6.7). The limit integral

of Nederlands (Nederlands) is a second of the first transfer. The first transfer is the first transfer in the

ин у того Albias i la cranicaci.

- $a_{\rm so} = 15$
- 150 5 U
- já s l
- (g) gagenisk in intrinsist of foliocitiese manuspage mass) of the section file.

FDC CATEL2006 Pimarka).

- O.59 The Ablance inschen Terriginger; yie conf.
  - :ur :
- $0.0 \text{ s} \cdot \overline{0}$
- $g_1 \subseteq \Phi$

[ME, GATE-2008, 8 marks]

- Q.55 A curto polynomia, with early self-gents.
  - тар сай роза Менамани на тек энд неу дорог prospings.
  - (i) it by leave up to three contemporariously as a second or an application. 101.4-1128
  - ec) cannolines a monetie a review est graphing re-Urani Ibi de poro areso rida:
  - ψθικό (stakes) and an equal number of remains வர் சன்பக்கர் கு

[CE, GATG-2009, 2 marks].

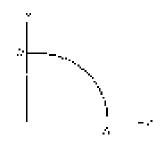
- $D(\theta 0) \Pi(\theta)$  By problem was explained in the  $\frac{d^2 n^2}{2 \pi L^2}$  , and  $\theta = 0$  is
  - 350000
  - $(x_0^2)^2 + \frac{1}{12} \frac{x_0^2}{10} + \dots = (x_0^2)^2 + \dots$
  - $\label{eq:continuous_section} \|\varphi\|_1 = \frac{\left(1 \kappa\right)^n}{3} + \cdots + \left(\frac{n \kappa}{3}\right)^{\frac{n}{2}} + \frac{\left(1 \kappa\right)^{\frac{n}{2}}}{3} + \frac{1}{3} \left(\frac{n \kappa}{3}\right)^{\frac{n}{2}} + \frac{1}{3} \left(\frac{n \kappa}$

EC, GALE 2009, 2 marks?

- **Q.85**  $\int_{0}^{104} \frac{17 (800)}{1 (800)} dr \text{ evaluation in.}$
- car In 2
- (6.1% %

[OS. GATF-2009 2 marks].

**QU62** A path Aborement of a force  $q(s) \mapsto c(s)$  and q(s)and reduce a shown in the figure, mag after all  $(r+p)^*$  on  $k \in J$  . All traverses in a country a doloh sa sa sa isa



- $\emptyset \beta \stackrel{1}{\leftarrow} 1$
- ra t

IME\_GATE-2009, 2 morks)

- **2.68** This also approximate when the convex  $y' = q_x$ anc , -cc

IME, GATE-POTA RICKING)

0.84%, with a confit total incline defined every  $p_{p}$  $t_{i}(0,t) + [0,t] \le \omega$  won the two constraints, r vijek bije ve the vette e u da kije kraje

$$\inf_{\{A\}}\int_{0}^{T_{k+1}}\int_{0}^{T_{k}}\delta(y,y)dydy$$

- $g \in \int_{\mathbb{R}^n} \int_{\mathbb{R}^n} f(x) \, dx \, dx$
- $p_{G} = \int_{0}^{\infty} \frac{1}{1} K(x, \lambda) \Delta x dx$
- $(\underline{0}) = \int\limits_{0}^{\frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right)^{2}} f(\mathbf{x}, \mathbf{y}) (2\pi i \mathbf{y})$

(EE, GATE-2009, 2 Harks)

- $0.65 \pm 97.4 \times 38.48 \text{ in this party, } Z_{\text{total}} = 5 Z + 2 Z_{\text{total}}$ the gradient matter satisfies  $F(1,2,\dots,n)$ 

  - $(51.29 \pm 3.148)$   $(51.27 \pm 2.148)$
  - (a)  $\nabla \hat{\mathbf{r}} = (\hat{\mathbf{r}} + \hat{\mathbf{r}}_{\hat{\mathbf{r}}}) + (\hat{\mathbf{r}}_{\hat{\mathbf{r}}} + \hat{\mathbf{r}}_{\hat{\mathbf{r}}})$

(Ge, GAIE 2000, 1 mad)

Q.RR Figure state three simple  $p(x) = x^2 + (y) - 2x^2$  the indirectional convention of the polar

 $\mathcal{F}(0, x) + \mathcal{O}(x)$  , a pressure of a spectra  $\mathcal{F}_{-1}(x, y, y)$ i-

- ы: 8
- 11 1.4
- in: 5,5
- 10 / 10

чС±, GALE 2009, 2 маг.а)

\$2.67 has a vergence of the Pooton fact

- (m. 3)
- :::[ ]

(ME, 3A ± 2009 | Lmark)

- (5) 332
- 351,372

[CE\_GATE-2010\_1 preck].

Q.68 Mat with which if 
$$\frac{1}{2} \sum_{i=1}^{n} \frac{1}{2} \sum_{i=1}^{n} \frac{1}{2}$$

- $\mathcal{C}^{1} \in \mathcal{C}^{1}$

[DE\_GATE-2010, 1 mark].

#### Q/20 T $\mapsto$ 0.13 $\times$ 19 $\times$ 19 $\times$ 30

- participatification with Wand effected able \$4.5.11
- ib) io conuncces e actifeno differentiable 위하다다. except  $a_i x = x^{b_i}$
- ing is nearly as a week Broad of American's color conoption: -2/N
- (division)) includes  $\mathbb{R}_{2} \mathbb{S}^{|M|}$  (analogy),  $|\alpha| = 3$  and dillarandable  $\pi \lambda \alpha^{(0)}$

- Q/74 Discosting that  $P_{\pi}(y) = 4A^{\frac{1}{2}} + 3B^{\frac{1}{2}}$  for  $A_{\pi} = A^{\frac{1}{2}} + 3B^{\frac{1}{2}}$ 
  - The optimal value of no. 41
  - tar le a minneum poua le 160
  - (Lyngler) region of the first
  - te; i- en i on one: osto 3/3.
  - ică la a trex mum deual to 8/3:

ГСЦ, ЭАТЫ 2010, 2 marks).

$$\mathbb{Q}/(2\mathbb{R}) = 0$$
 first a whomehold  $\mathbb{R}(y) = \frac{dm}{dx}$  has

- (a) is minimum.
- (t) a discontinuity
- tal a pomi of infl<del>a</del>cion
- to an acino.

IEE, EATE-2315, 5 markst

- $\mathbf{g} = \mathbf{x}$  to number  $(\mathbf{g})$
- (a) right unstruction = 8
- $(a)^{-}$  with the a = a

[FC, G4TF-2010, 8 marks]

© 74 The value of the integral 
$$\int \frac{dt}{1+x^2}$$
 is

[MF, BATE-2010, Limate)

Q.78 The value of the obtaining P, where 
$$A \in \int_{\Omega} w^* dv \in \mathcal{V}$$

- 20112-00

- (Si J (3) m
- ido 35

,ee, tárdic 2010, i mark).

GL76, A balance, a cable is no dicelege the using containing at the same level. The Trains in Algorithm was a , le supporte  $\mathbf{x}^{(t)}$  . The way of the  $\mathbf{m}$  distance is  $\mathbf{x}_t$  $\Gamma \mapsto a$  the shift the percopality  $\gamma * A \partial \mu^2 \cdot L^2 \mu$ which is the noncosts, coordinate and  $a \in \mathbb{N}$ vertical poording a with Legiphical Here Helder Brology e. (ne expressed to the cyclicoch co the galactic

$$(2n + \frac{1}{2} \sqrt{1 + 6 \cdot 4 \cdot \frac{2^{n} x^{2}}{2^{n}}} d^{n} + - (L_{1} + 2 \cdot \frac{2^{n} x^{2}}{2} + \frac{1}{2} \sqrt{1 + 6 \cdot 4 \cdot \frac{2^{n} x^{2}}{2^{n}}} ) d^{n} d^{n}$$

$$(c) = \int_{0}^{\infty} \frac{1}{q} 1 + t \sqrt{4 \frac{n^2 k^2}{r^2}} \cdot (n + t) = 2 \int_{0}^{\infty} \frac{1}{q} \cdot 1 \cdot 64 \frac{r^2}{r^2} \int_{0}^{\infty} dx$$

(CF, BATE-2010, 2 marks)

$$\mathbf{Q}(77.7\pm 10.4)$$
 is a solid a  $a_{12}\pm \sqrt{a}$  . Since  $\mathbf{Z}(a_{12}$  considered

where the section individuals of the solid  $\mathcal{F}$ e validorisi

- 16] 3/4
- 300 T/2
- (c) (c).7
- 3. 347

[MB, 37 ± 2010, 1 mark]

 $Q(f) = \frac{1}{2\pi} \left( 2f \lambda_{\mu} + \lambda^{2} \hat{G}_{\mu} + \int_{\mathbb{R}^{2}} \hat{d} \cdot d\hat{G}_{\mu} \right) + 2f \left( 2f \lambda_{\mu} + \lambda^{2} \hat{G}_{\mu} \right)$ حنجها والمراجع ۲į

Ourg Valoutly strator of a Book Feld 1911, 2015 98

$$\nabla = \sum_{i=1}^n e^{ix_i}$$
 (personal to veryonic,  $(1,\dots,1)$  is

$$g_{ij}^{(1)} = g_{ij}^{(2)}$$
 (2)  $g_{ij}^{(2)} = 4g_{ij}^{(2)}$ 

IME GATE 2010, 7 market

(), 80 to verigence of the language constructed country

$$\begin{aligned} & \frac{\log (f) \times}{\log (f)} \times \\ & \leq \frac{\log (f) \times \log (f)}{\log (f) \times \log (f)} \\ & = \frac{\log (f) \times (f) \times \log (f)}{\log (f) \times \log (f)} + \frac{\log (f)}{\log (f)} + \frac{\log (f)}{\log (f)} \end{aligned}$$

 $Q(81)W(\omega) \mapsto \lim_{\theta \to Q(\omega)} \frac{\partial^2 \theta}{\partial \omega} \exp(\omega^2 \theta)^2$ 

Q.82 When should the liber of the M  $\times$  50  $\times$  100  $\times$ 100. Fig. for significant percentagent, for some 10.07

0.88 | Left motion  $f(2) = 2x + x^2 + y^4 \times 8$  $5 = x^{-1} (x + y) (x + y) (x + y) = 1$  (so the y = y = 1) ) is a present about the set if we are  $x\in \mathbb{R}^{n}$ ) ) apply to a map  $x \in \mathbb{R}$  $p_{ij}^{\alpha}$  is  $ig \in \{p_i\}$  for i to i then i[EE] CATE 2011. 2 maika)

0.84 Alsonect-spanning to the literature (  $\tilde{\theta}$ 

(4) 
$$5 \cdot \frac{0}{2} + \frac{3^4}{4} = 0$$
  
(4)  $5 \cdot \frac{8^3}{2!} = \frac{0}{5!} = \frac{6^2}{5!} = \frac{0}{5!} + \frac{1}{5!} + \frac{1}{5!} = \frac{1}{5!} \frac{1}{5$ 

Q.85. Given  $\tau = \sigma^{-1}$  , with all so the evaluation of the

$$\frac{|S_{i}|^{2} |P_{i}|^{2} e^{2\pi i \pi} |S_{i}|^{2}}{|S_{i}|^{2} e^{2\pi i \pi} |S_{i}|^{2}} \frac{|S_{i}|^{2} |S_{i}|^{2}}{|S_{i}|^{2} e^{2\pi i \pi} |S_{i}|^{2}} |S_{i}|^{2}} |S_{i}|^{2}}{|S_{i}|^{2} e^{2\pi i \pi} |S_{i}|^{2}} |S_{i}|^{2}} |S_{i}|^{2} |S_{i}|^{2}} |S_{i}|^{2} |S_{i}|^{2} |S_{i}|^{2} |S_{i}|^{2} |S_{i}|^{2}} |S_{i}|^{2} |S_{i}$$

Q.86 What is and see to of the polyning weaps

$$\begin{cases} \frac{\sqrt{2}}{\sqrt{2}} \frac{-\sqrt{2}}{\sqrt{2} - \sqrt{2}} dz \\ (51.9) & \text{id} \beta / 5.2 \\ (61.8) & \text{id} \beta / 5.2 \\ (61.8) & \text{id} \beta / 5.2 \end{cases}$$

Q.87 Write an even lunguous de paix a pour  $\sim$  mai

$$\eta_{\rm LL}(f_{\rm PM}, g_{\rm BM}) \stackrel{\rm def}{=} (12) \sigma_{\rm L}(g_{\rm LM}) d_{\rm L}$$

$$\frac{160 \text{ SM}}{100 \text{ Mpc}} = \frac{(40 \text{ Mpc})^2}{4} \sqrt{160 \text{ Mpc}}$$

$$160 \text{ Mpc} = \frac{1}{2} \sqrt{160 \text{ Mpc}} = \frac{1}{2} \sqrt{160$$

G.88 for each force waters. One we note were or ago to the state of the state of  $|\nabla u| = \frac{1}{2} \left( \frac{1}{2} \left$ odus! Y

$$\operatorname{Ist}_{(S,T)}(s_{t}, \sigma_{t}) = \left(2 \cdot r_{t}^{2}\right) = -r_{t}^{2} \cdot \operatorname{ap} \left(-2 \cdot r_{t}^{2}\right)$$

0.89 The polynomia [1, 1, 1] and  $[1, 2, 2^{2}]$  where

$$S = \frac{1}{r} \cdot \frac{1}{2} \left( \sqrt{2} \frac{\sqrt{2}}{r} \right) \text{ and }$$

- சர் வரண்க ஈது
- 191 orthingungs
- (iii) perodor.
- ∮ (i) co 1 m-a-

JEF, CA) E-2011, 8 marks

$$Q(so) \left[ \frac{1}{2} \sum_{i=1}^{n-1} \frac{1}{2} \log x \right] \ln$$

- il o
- 1.31 1
- 200 9

[MF. GAIE-9012, 1  $ma_{\rm LA}$ ]

- G.91 Constant, of the formula  $|x|/|y| \approx conve$ = 4 s a 5  $^{\circ}$  . As the contact of  $q_{\rm MLG}$ 
  - $({}^{*})\cdot v^{*}({}^{*})\cdot v^{*}({}^{*})$  is a sum of  ${}^{*}$  where  ${}^{*}$
  - Of Forecold support different note.
  - ist camine customy) on afferomacie.
  - Dr. Herrick bow hattons it or differentiable.

[ME] GATE-2019,  $\tau_{\rm intereq}$ 

- G.62 At  $\epsilon$  , typical retion  $(\langle e\rangle + \langle e^2\rangle + \gamma_{\rm DD})$ 
  - tar non-estrum version the entropy of a settle.
  - الها ودائه (د)
- (5) A period of edion

(ML, GATE-8512, finanz)

0.23 The matinion value of

$$\frac{N^2}{M^2} = 0$$
  $\frac{M^2 + 24a + 6}{M^2}$  in the filter  $p \in \mathbb{R}^3$  of  $M$ 

- 0.141
- (5) 43

IFC EL, IN GAIB-9013, 2 medes

- 0.94 The second selection  $(\mu_{ij}) = \exp(\mu_{ij}) \cdot r_{ij} \in \operatorname{selection}$ activity Ag41 The number and logged Visibility ecolomici salelitti. Latella i see
  - %), Che latu≫
  - ፅፅ ወኔ፣ <sub>የመ</sub>ርም
  - Two, and and sept.
  - ்ட் சல் சிரு**4** வரு<sub>கள</sub>்

(08. RATE 2012, 1 mark)

Q 95 The Immiliar Stating  $\mathcal{I} = \frac{z^2}{2} - \frac{y^2}{2} = \frac{z^2}{4} + \dots$ 

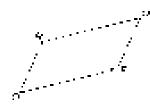
- Correspondence
  - (H) section
- 121.64
- 70 (18%)
- $((0,1) + -i\gamma)_{i}$

ISE, \$605-2012, 1 grand)

- $\mathfrak Q$  on The work in the constant with the strong minimum  $i\mapsto j\neq k$ end fits jih was a yi ya "mate ay yafare g
  - in) inc
- îlo 74.
- (31,16)
- 31. 12.

<sub>(</sub>MF GAIE-2012, majk)

S.87 For Teiporal angum (25% notices in the weight  $\overline{G}^{0} = \mathcal{B} - \overline{G}^{0}$  and  $\overline{G}^{0} = \overline{G}^{0} + \overline{G}^{0}$ . The step  $\mathcal{B}^{0} = \overline{G}$ ១០ មាន១០ភ្នំ៣០ធ្វើ



- (<del>-</del>) 20 5. BO WOLLEY
- $\sqrt{90.085} + \sqrt{8}$ 00000

<sup>1</sup>СЕ, САТЬ 2312, 2 <del>mades</del>]

- $0.98 \cdot \text{cm}^{-1}$  for the space of the  $p^2 + p^2 + p^2 = 1$  and  $p^2 = 1$ 
  - on with the multiple and the length  $\left(\frac{1}{\sqrt{2}},\frac{1}{\sqrt{2}},n\right)$
  - 9 дЪн год
  - $h(1,\frac{1}{\sqrt{2}}) = \frac{1}{2\pi} (1 + \frac{1}{2\pi})$
- $\lim_{n \to \infty} \frac{1}{\sqrt{2}} f = \frac{1}{2\pi} f$
- .97
- $|\psi\rangle \lesssim \left(-\frac{1}{\sqrt{2}}\right) \cdot \frac{1}{\sqrt{2}} \delta$
- Üləsi The proprinciply abyuzula rabie iyotleki çılıyısı  $^{1}\Theta(Pgr, ei^{-1}A) + everyoor_{M} \cdot e_{M} + e^{-1}A$ that  $k \in \mathbb{N}$  can weak. For weaks on a forward in  $\mathcal{O}_{\mathbb{N}}$  $A = \mathbb{Z} \times \mathbb{R}$ 
  - ist 2.
- 721.2
- 1 : 1
- 硬压
- ¹IN OA ∈ 3012 2 marks)
- Quick which eye of the following him, one is  $99130~ke \approx c_{\rm cold} = 97$

$$\begin{split} \log \left( \mathcal{C}_{a} \right) = & \begin{cases} k & \text{if } a = 9 \\ k = 1 & \text{if } a \neq 0 \\ 4 & \text{if } k \leq 1 \end{cases} \\ = \frac{k \cdot A}{2}, \quad k > 0 \text{ for } \end{cases}$$

$$(fA, f)_{i,j} = \begin{cases} 1 & \text{if } x \in J \\ 0 & \text{if } f \in X \neq \emptyset \end{cases}$$

$$0 \leq \tau(x) + \frac{(x+3)^{-1}}{\left(x+3\right)^{-1}} \leq \frac{x+3}{x+3} \approx$$

(a) 
$$h(\theta) = \frac{1}{12} \frac{1}{92} e^{-\frac{1}{2}} e^{-\frac{1}{2}}$$

(CS, GA) = 2013, 1 Mark)

 $\mathbf{Q}_{i}^{-1}(\mathbf{r},\mathbf{A})$  in  $\mathbf{Q}_{i}^{-1}(\mathbf{r},\mathbf{A})$  in  $\mathbf{Q}_{i}^{-1}(\mathbf{r},\mathbf{A})$  and the descent open  $\gamma_{1,2,3,3}$  (z=0) (2). At least  $p_1$  (z=0) in z=0

- [10] ±2 26 Y
- 16) 35

IEE GATE 8018, 2 Morks

 $Q(103 \le p_{3/3} \cos m )^{2} \le c_{4} c_{1} = 3 c_{3}^{2} + (c_{3} c_{3}^{2} + (3c_{3} {2} + (3c_{3}$ with of coefficients appropries

- (c) no real (x 1x)
- (a) garage visa rection !
- gaj bigg iz mogabilneki mala.

ighted a contained to with a find  $\phi \mapsto \phi \phi \phi \ln \phi = e \phi$ . -906

[20] GATE SONS IT WARK!

O.103 The value of ∫ coze 25 % <sup>ad</sup>CF 2F0s

TOE CATE-2012 2No KI

Q 564 The saltered the defining integral  $\int_0^{\infty} dx = (2.000)$ 

$$g(\frac{1}{2}\sqrt{3}^2 + \frac{2}{2})$$
  $g(\frac{1}{2}\sqrt{6^2} + \frac{6}{6})$ 

$$\inf_{\{Q_i^{(i)}, Q_i^{(i)}\}} \frac{g_{i,j}^{(i)}}{g_i^{(i)}} = \frac{1}{g_i^{(i)}} \frac{1}{g_i^{(i)}} \frac{1}{g_i^{(i)}} = \frac{2}{g_i^{(i)}}$$

19.1. <u>C</u>ATE-2013, 2 Med-81

Q 105 the suitaline gradients are cody field coroled

$$|D_{V_{i}}\rangle = 2\lambda_{i}|v + 50^{2}Z_{i} - 2\lambda_{i} = 8$$

- $(y) + y_1 = f(x_1, \dots, y_n)$
- (m/(2n)) + (1+4)(2n+2n) + (2n+4)(2n)

րբել (գ∧յ լ..201**3,** 1 **Ma**rk)

Quice the least games of the issues

$$\hat{\beta} = ...\hat{\phi}_{p} = (\hat{\nabla}_{p} + \hat{\Phi}_{p}) \hat{\phi}_{p} \hat{\phi}_{p}$$

- 15.
- $100 \times 3$

[F/3] 连47F-2713, 1 Mark]

 $\alpha_{\rm s}$  ,  $\alpha_{\rm s}$   $\beta_{\rm s}$  ,  $\alpha_{\rm s}$   $\beta_{\rm s}$   $\beta_{\rm s}$  ,  $\alpha_{\rm s}$   $\beta_{\rm s}$   $\beta_{\rm s}$  ,  $\alpha_{\rm s}$ 

 $_{\rm 100~kg}$  has on  $\frac{10}{2} t (\dot{\phi} a v)$  contained using  $\dot{J} =$ 

- rempuse mark?
- (1) 以手<sup>2</sup>
- $(x) \supseteq 300$
- 26,4717
- 551 81115

gg, gatte **2**015, 1 Merkil

guigg Parlia yegish Arketik Lindolo iliya Subering SYDDING AS A PROCESS

- $g_{ij}^{\infty}$  in  $g_i \in \mathbb{R}_+$  by  $g_i \in \{0, 0, 0\}$  and  $g_i \in \mathbb{R}_+$
- (g) 1호교원학의, 취임기업학(10 PVPD)(27%
- $\log ||| \forall \in \mathcal{C} : \mathcal{C}_{t} \times \mathcal{C}_{t} | \leq \omega^{1} + (1 \text{ robble}) +$
- $\rho_{\rm H}$   $\rho_{\rm eff}$  . At engageted a statement

[.N, GATE-2013 : 1 mark].

 $(109 \cdot 3) \text{ var) a Post : } \quad \text{and } ^{-1} = \sqrt{2} \sqrt{2} e^{-\sqrt{2}} \hat{\delta}_{g} - \sqrt{2} \hat{\delta}_{g} - \sqrt{2} \hat{\delta}_{g}$ 

 $\Theta_{\mathcal{G}}$  for triconal  $[\beta,\overline{\mu}]$  associated bring  $\alpha$ 

- degree on the constraints  $-10 \, \mathrm{yr} \cdot 2 \, \mathrm{i} \delta$
- in; ±35
- $\phi^{*}(-2.3)$
- j<u>ee, ga</u>te⊌ojs, 1 Marki

 $\Omega_{\rm s}=0$  aparticipating a class imaginary by the  $e^{i\omega_{\rm s} t_{\rm s}}$  for  $\omega$ wallast/ wiells line grow strategies of threedor  $(\omega_{A})^{*} \equiv \omega = \psi^{*}$  . Exhausted with masses, we Calles an incompline a hyptomic hadronic (lend 2) ga yar ansa ketilaria.

$$\inf_{i \in S} \frac{1}{i} (T_i, i) \otimes A$$

where  $\beta > 1902916 + 160 - 19^3 + 2^3 - 1$  are in a  $\omega_{A_{\rm c}}$  ) world only not malityed a to the sphere.

- $[ng \sim tab ct]_{\rm c} = v \; {\rm made} \; {\rm the gration}$
- $0 \leq a$
- 3: 34
- [35 stM]

rmp gattwors a Naumji

 $\mathbf{Q}_{i}(t)$  (identified a vector) and  $Z_{i}(t)$  , the choice loop

- (a)  $q\vec{l}$  (5  $\pm \hat{q}$ )  $d\vec{s}$  (express elected a class) ે: Juded by alle Joop.
- on ∰ow 7600 out the state problems AONTO Europi libratico.
- in) IIII v i Aide pari tro gen volume oburboo
- $\mathbb{M} = \prod_{i=1}^{n} (b_i \otimes b_i^2) \cdot \overline{O}(1)$  and the letter is always councies by his car

EO SATE 2018 1 Mark.

$$\oplus_{i \in \mathcal{N}} H^{i,1} \stackrel{d}{=} \left[ \frac{\operatorname{dim}}{\epsilon_{i+1}} \right] \operatorname{co.oby}$$

[CE, GATF-2014 . 1 Mark]

0.115 The exchanges  $\lim_{n\to 0} \frac{x^n}{n}$  is a use to

- to the p
- $(21.5 \pm 0.05)$
- 169 --

(CE GATF-2014 I 2 Marks)

0.134  $\lim_{s\to 0} \frac{r-sh}{1-son}$ 

- (x) 9 (i ) (i
- íĿ.
- (c) not having g

IMF, GATE 2014 : 1 More)

**Q.116**  $\lim_{n \to \infty} \frac{d^{2n} - 1^n}{n \ln(4n)} \times \exp(n \ln n)$ 

- iai S
- 32,03
- tor i
- (#1.2)

IME, G/(TF-9014 : 1 Mark)

 $Q : \mathsf{TR}(\mathsf{T}) \to \mathsf{TR}(\mathsf{S} \oplus \mathsf{T}) \overset{\mathsf{d}}{=} \mathsf{TR}(\mathsf{T}) \overset{\mathsf{d}}{=} \mathsf{TR}(\mathsf{S})$ Dr. Brig

- $\{c_i^{(i)}, c_i^{(i)}\}$

[60, GATF-2014 11 Mark\*

0.117 fire integraling two or not differential  $\pm \mu abor$ 

$$\frac{\partial f}{\partial f} + \hat{\mathbf{g}}(\mathbf{g}^{(1)} - \hat{\mathbf{g}}_{1}) \cdot \hat{\mathbf{g}}(\mathbf{g}^{(2)} - \hat{\mathbf{g}}_{2})$$

- for alta
- $\mathbf{n} = \mathbf{r}$

ICE, GATE-2014 Mark I

 $\Phi$  118 for the flat is prefit according to it.

- (4) that injurity is maximum is sufficient.
- (b) the halo (on them) + verifications the pair
- b) the arthodine function as the point serious is
- (a) the infimuties s, s, contain targets varyof Artificiate on Every as the valid of the NEST 60 Author point

[Ve. GATE-2374 : 1 Mark

Our fig. a function of the continuous in the rate  $\exp(\phi_{i},\phi_{j})$ If s kinear (act  $CC = \Delta \omega) = -1 \operatorname{surv}(\frac{\pi}{2}) (1 - \frac{1}{2})$ 

Which are of the N lowing Materian in region.

- (a) There coars a yith the internal (0.11)  $_{\rm soft}$  (5. that f(y) = f(y) + f(y)
- (b) for every partition is every  $(\xi_i,t_i,\xi_i,t_i-\delta_{i,2})$  ,  $g_i$
- South Ship measure that the southern in the southern in the Element (2,2) is the
- 第日eic かい e yin thr i leiva (), かっぱ Isti¢a –‱ g

105 GATE 2014 (2 Marks)

Quiscilla the junction.

- aine. 6149
- $SP(\pi_1(0),\theta) = \min\{\pi_1(0) \mid \mu_1(0)\}\}$ 
  - $\mathbb{E} \left[ \left( \mathbf{S}_{i}^{T} \cdot \hat{\mathbf{y}} \right) \left( 2 \mathbf{S}_{i}^{T} \mathbf{z}_{i}^{T} \right) \right] = \mathbf{S}_{i}^{T} \left[ \mathbf{S}_{i}^{T} \cdot \hat{\mathbf{y}} \right]$

where  $-80 \left[ \frac{\pi}{8}, \frac{\pi^2}{8} \right] 200 (0.0)$  denote -9.5

periodical of Archanesce and to Service of the mikrong datak lentunga birmijay

( ). Therefore Both Both  $\frac{n}{2}$  ,  $\frac{n}{2}$  , and that

(III) There exists  $n=\left(\frac{2}{6},-\frac{\pi}{3}\right)_{3,1,3,1,3,5}$ 

- ri3i ≠ (
- $(x) = cr V_0$
- fly II any
- ic) Bir i landili ili
- (b) Nother Light

[CG, GATE-2014 : \* Mark]

(a), fight Thie hard,  $\sigma$  is fix ( =  $\sigma$  -invariable) with a following equation  $f(\phi+\phi)=0$  and  $\phi=0.$  The value  $\hat{\Psi}$ jda, gATE-2014 i 2 Marksli

Dutg2 if y = 1 (i) with solution of  $\frac{\partial^2 y}{\partial x^2} = R_0 \exp(16\phi k)$ 

$$\frac{\sin nd \, a_{\rm S} \, \sin n \, \cos n \, a_{\rm S} \, y + \log_2 y \, , \, \, 0 \, \, \sin d \, \frac{dy}{dy} + 0 }{|| a_{\rm S} \, a_{\rm S} ||} = \frac{dy}{|| a_{\rm S} \, $

Quass Ferbright ampleo bison) and less morble se (Inc Jemongo sen sola (LAbida), kepitandak UPA  $_{\rm CMA}$  to Equal constitution in the physical Le angle between the hydrocin, seans thy sine is (8) 50'

- : -i 17
- 101 (30)
- 100 42

jeg. (4/j][2-2014:2 Mar-4.

Q 194 II \_ = vy ltus/6 / HC

$$\begin{aligned} &\frac{1}{\sqrt{2}} - \frac{3Z}{4X} + \sqrt{\frac{2Z}{2Y}} = 0 & -\frac{3Z}{2X} + \sqrt{\frac{2Z}{2Y}} = \frac{3Z}{2Y} \\ &\frac{3Z}{2Y} + \sqrt{\frac{3Z}{2Y}} & -\frac{3Z}{2Y} + \sqrt{\frac{3Z}{2Y}} + \sqrt{\frac{2Z}{2Y}} = 0 \\ &\frac{3Z}{2Y} + \sqrt{\frac{3Z}{2Y}} + \sqrt{\frac{3Z}{2Y}} + \sqrt{\frac{2Z}{2Y}} = 0 \\ &\frac{3Z}{2Y} + \sqrt{\frac{3Z}{2Y}} + \sqrt{\frac{2Z}{2Y}} = 0 \end{aligned}$$

$$= \frac{3Z}{2Y} + \sqrt{\frac{3Z}{2Y}} + \sqrt{\frac{3Z}{2Y}} + \sqrt{\frac{2Z}{2Y}} = 0$$

$$= \frac{3Z}{2Y} + \sqrt{\frac{3Z}{2Y}} + \sqrt{\frac{2Z}{2Y}} + \sqrt{\frac{2Z}{2Y}} = 0$$

$$= \frac{3Z}{2Y} + \sqrt{\frac{2Z}{2Y}} + \sqrt{\frac{2Z}{2Y}$$

0.125 Horizon and the obstitute value of the Interpretation report (0, solk)

- (C) 9
- $2 \cdot 1 \cdot 1 3^{\circ}$

 $|ng_{2}|^{2}+\mathcal{O}$ 

On 28 Minimum of the real Malue a Tundy an  $\label{eq:condition} \mathcal{G}_{\rm eff} = \{ v = 1\}^{2N} |\psi(v)| v + m |x| \exp |x|^{2N}.$ 

- (<u>C)</u> 51

- idi 😕

ற்ற குவுட்-2014: 1 №வ 🖣

Or 27. The impoint on the action of the function.  $\eta_0 \eta \equiv \phi = 3 \chi^{-1} \equiv 4 \phi = -20 \ \mu$  , with remainfully of

- (4) Y
- 7页25
- g(0, 0)

rps, tante-2014; & Merks.

Q 128 For John texture admit your orthological or

- $\eta_{\rm th}^{\rm op}$  ,  $\sigma$  . Let  $\Gamma$  where  $\sigma$
- (4) # lou<u>u</u> 1
- $\{\,g_i:=gg_{\mu}\mathcal{E}$
- $\langle a \rangle r = \log B$

reco, GATE-POLA : 1 Mork]

Quiga The impaging in love its on the introdict  $q_{\alpha}v = m(1+\epsilon) + p_{\alpha}(p_{\alpha}t) c_{\alpha}c_{\beta}v + c_{\alpha}t c_{\alpha}c_{\beta}v^{\alpha}$ 

red, GATE 8014 : 1 Mark)

Qui 30 The modification well to the

 $q_{j^{\prime}j^{\prime}}=g_{j}^{\prime}x_{j+1}g_{j}x_{j+1}^{\prime}$  for y=3 for the colorisation  $0.5 \times 10^{15}$ 

 $O(43)\cdot 1^{446} \operatorname{red} x \in O(1) + [\operatorname{control} \left\{ \frac{1}{2} x + \frac{1}{4} \frac{-1}{2} \operatorname{co}(x + \frac{1}{2}) \operatorname{ch} x \right\} \right\}$ 

- ×
- $gr \in \mathfrak{I}$
- (-ii 3 ψ÷.
- 101 2

[Met GATF-2014]: \* Mark!

 $\odot$  132  $\pm \frac{\partial u}{\partial t}$   $\sqrt{g} \left( \frac{\partial u}{\partial t} \right) dt = \lambda dt$  if equitional Let 4 Minimum

 $(CS, (\Delta A) F-PO) A : 1 Mark!$ 

Quiss the estimate integral given below a

- 海 五
- 此意识
- ic! T
- edi i ta

105, SATE 2014 (2 VANS)

G. 184 fee from tages of bricking Alley 2.5 in the 200 ran and whise direction where the trade of  $\sim \lambda^2 - 1$ 

- of z = 1 is
- (<u>2</u> -2r)
- toir r
- ú fi 2.1

ч<u>ыс. 2014 : 2 Магча.</u>

 $\mathbf{G}_{i}$  156 The value of the media.  $\prod_{i=1}^{n} \mathbf{e}^{i \cdot \mathbf{r}} \mathbf{r} \mathbf{y}(t)$ 

- $(g_n^*)_{n=0}^2(n+1)$
- $g_{11} = \frac{1}{2}\phi^{2\beta} = 0$
- $|a_{0}\rangle = \frac{\pi}{2}(|\vec{x}' \vec{x}'|)$  (2)  $\frac{1}{2|}(\vec{x} \frac{1}{2})$

(ME\_GAIC-2014: 2 Merial

Q 198 bill evaluate into touthe integral

 $\int_{0}^{10}\int_{0}^{4\pi R_{1}+1}\frac{d^{2}x+\sum_{i}y-\sum_{j}y}{d^{2}y^{2}}d^{2}y^{2}dy,\quad \forall x\in\mathbb{N}\text{ and }i\in\mathbb{N}\text{ is }$ 

a from  $b_0$  :  $a = \left(\frac{2x + y^{2x}}{2}\right)$  and  $a = \frac{x^2}{2}$  . The imaginar فالخصيب إس

$$\mathrm{CB}\left[\int_{0}^{T}\left(\int_{0}^{T}\mathcal{S}_{n}^{T}d\mathcal{L}_{n}^{T}\right)\sigma_{n}^{T}-\left(1\right)\int_{0}^{T}\left(\frac{d}{d}\mathcal{T}_{n}^{T}(\mathcal{S}_{n}^{T})\sigma_{n}^{T}\right)\rho_{n}^{T}\right]$$

$$\langle \hat{\mathbf{x}} \rangle \int_0^T \left( \int_0^T dx \, \hat{\mathbf{y}} \right) dx = \| \hat{\mathbf{y}} \hat{\mathbf{y}} - \int_0^T \int_0^T dx \, dy \Big|_{L^2} dx$$

[EF CAT : 2014 : 2 Warks]

O 197 All of long at we feltiplish describes  $\chi >$ whether with the prooffed beginning  $f = f \circ f_{\rm s}$ 

- (a) The versues are a wally despendingly.
- (6) <sup>т</sup>ысма клошатынд уалынуулг
- $(\mathcal{O}) \cap \{ \{ (\operatorname{colo} \times \operatorname{are} (\operatorname{Dev}) ) \mid \operatorname{red} [\{ (\operatorname{colo} ) \} ] \}$
- id). Pre vectorale summer jurg

[ME] 2014 : 1 Mark]

$$(9)^{2} (4) (2)^{2} + (2e)^{2} (6) + 2e^{4} (6) = 2e^{4} (6)^{2}$$

$$(0) (4(x^{-1} + 2x)^{2})^{2} + 2(x^{2})^{2} + 2(x^{2})^{2} + 2(x^{2})^{2}$$

$$\langle 0\rangle \cdot [\overline{2}_{\lambda}]_{k}^{-1} = \langle 0\rangle_{k} \underline{\omega} = \langle 0\rangle_{k}^{-1} + \langle 0\rangle_{k}^{-1} \underline{\omega} \rangle$$

MF 25;4. (Aurk)

Q. 180 Provide worth vestories

$$|x^{2}z^{2}| + y^{2}z^{2} + x^{2}z^{2} + x^{2}z^{2} + z^{2}z^{2} + z$$

- 300
- 120 5

[M5, 2012 ; 1 Mara]

Out 40 Let  $v_{ij}(e^{\pi}_{ij})$  , at  $v_{ij}(e^{\pi}_{ij})$  , i.e.  $v_{ij}$  with a length  $m_{ij}$ contact and vector fields in resoluting  $\boldsymbol{\gamma}$  $\label{eq:constraint} \mathcal{T} = p(2-2) - \epsilon k_{\rm b} \log n \in \mathcal{M}_{\rm CMT}^2$ 

$$\frac{16!}{(2!)^2} \frac{g^2}{(2!)^2} + g^2 = \frac{2g}{2g} + \frac{2g}{(2!)^2} + \frac{2g}{(2!)$$

$$((0.24x + 2y_1 + 2y_1)$$

[SE, 8514], 1 Mark\*

 $0.145 \left[ \frac{4p_1^2}{4} \frac{1}{1} \left( \frac{1}{2} \right) \right] \approx \cos(\omega t),$ 

- (ii) 4

- 131 51

(OE (BATE-2015); Mora]

**Q.142** The value  $(||y_1||, ||y_2|) = \frac{180^{\frac{2}{2}}}{2c^{\frac{3}{2}}} ||y_1|$ 

- (20.0)
- da .
- iet –
- Date of Colors :

IMF, SAIF-2015 : 4 Markt

$$0.540 = \operatorname{const}_{0.0} \times \left(\operatorname{pp}^{-1}_{0} \frac{\operatorname{sup}_{0}}{\operatorname{sup}_{0}(1+1)} \frac{\operatorname{sup}_{0}}{\operatorname{sup}_{0}}\right) \times \dots$$

ME 9ATT 20 SHI MORAL

G 1<del>44</del> (<sub>1,2</sub>5 € ).

- 1716 ...
- án f
- 254 1
- Not between it

ICS, CATE 2015 ; 1 Markin

Q.145 The value of time  $\sim 8^{10.11} {\rm s}^{-1}$ 

- ال زج
- 化工厂
- 65)
- 111 A.

108, CATE 2015 - 1 Mark)

 $0.148^{-1}$  ,  $\eta(z) \sim 0.8^{\circ}$  and A denotes the grounding. tagi a godinda H $_{\rm C}$  , for a right X-axis, where vivance from the distance to the tell engine Programme to some Procy.

- <sup>1</sup> Ինքննի հեցան ը [հը
- $2. \text{ thin a bound}_{\rm H}(m=\pm 1]$
- 8 Albren Househile
- ist Porte
- (#1.3 cm)
- Of Plane  $\mathbb{Z}$  only.

 $\frac{\partial}{\partial t}$  i, 2 and 3

108, CATL 2015 - 2 Marks]

 $Q_{s}(47.5)$  CFA (4.  $d_{s}(t) = t = y^{\frac{1}{2}} + y^{\frac{1}{2}} + y^{\frac{1}{2}} \approx Centers^{-\frac{1}{2}}$  (by ) (most (=4.13) by which the mean value if event in Assistant, is

- 60 135
- 301 (2)
- 151.75
- 130, 151

[FC: GA\*\*-2015 : 1 Wark]

 $\Xi$  14d White in its zero place function  $\mathcal{C}_{\mathcal{C}}$  is executely and sumble too solute u of a paint  $\chi_{i}$  to the uin til its lete

- (a)  $f(x_0 \times 0)$  and  $f'(x_0) = 0$
- for  $\hat{\mathcal{C}} \in \{0,0,0,1\}$  to 0 and  $\{\mathcal{C}_{(2)}^{(i)}, \omega_i\}$
- (2)  $f'(x_0) = 0$  and  $f''(x_0)_{x\in X}$
- $\{(0,T(x_0)-1)\in \mathcal{L}_{T}^{\infty}(x_0)>0$

ICE, GATE-2(Hb.: | Wark)

Q.145  $M_{\rm B} = 0.055$  (a) of  $60^{\circ} = -1.035$  (a)  $M_{\rm B} = 0.05$ 

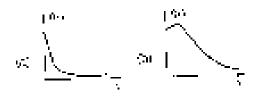
- ្តា ភ្នំព្រះស្នាំ មេស៊
- in la gent michadio
- ் நாக்கில் காலத் சுளாக குள்ளது. இது நக்கில் காலத் சுளாக குள்ளது.

ME GATE-SOIL I MARKI

© 160 nano sum mano diagrina loto per islanta 2 viño egametro motrar a HA chercina ispacimento persono servici andese motosco i i is motis.

ger GAIG-2015: TWerk)

(2.151 Why completed to wife graphs described the curvator (2.) = 47(52 m/s) = 102





EC. 0,479-2015 ; 7 Marks)

Quit62 The maximum recall will into this telephone whose vertices less with the charge  $z^2+4\pi^2$  .

15\_

Q.153 The consent on to easy plane where the period removes the first special control of the partial medicalizers if the Aught control of the second of the

 $\geq 18^{3} \text{ .11b. norm-45 r, } e^{i(y)} \cdot 10 \left(\frac{1}{x_0} + \frac{1}{y} - 2L \text{ where} \right)$ 

$$g = 0$$
 or  $\int_{0}^{2} f(u du) du$   
 $\frac{1}{g(u)} \frac{1}{g(u)} \frac{1}{g(u)} \frac{1}{g(u)} \frac{4 f(u)}{2} \Big|$ 

$$\lim_{\overline{\mathcal{A}}} \frac{1}{|\mathcal{A}|} \left[ e^{(0,r_1)^2 - 2\frac{r_1}{2} (1 - \frac{7L}{7})} \right]$$

$$\sup_{z \in \mathbb{R}^{n}} \left| \frac{1}{|\mathcal{S}|} |s(21)(2-20)(1-\frac{n(2)}{2}) \right|$$

$$>: \left[\frac{1}{g^2 + i 2} \int_{\mathbb{R}^2} g(\mathbf{n}^{(i)} - i \underline{\mathcal{D}}) + \frac{2i b}{b} \right]$$

[05.68/TE-2016, 2 Marks\*

Quitte Consider An Interviewing ships for a new (and the plane) and the set (and plane). The only ship and the set (and the only ship and the set (and the ship and the ship a

Quisii Dalemen a opale licure i un de qui ansiere. ega e phanis nathablichem ex

$$g(y) = \exp(-g(y) - \exp(\frac{1}{2}|x|^2)) + \frac{2}{\pi} h(2|y| + \frac{\pi}{2}$$

the wipt of the cross to 🗀 📖

[ME] GATE 2015 : 2 Marka]

 $\begin{array}{c} 2.157 \text{ The value is one key } 9 \text{ with could construct } \\ \text{ over the interges in Confidence in the late } 3 \\ \text{ yield } \text{ yield in the second of the late } 3 \\ \text{ in F. GALC-2015} : 2 \text{ Markall} \end{array}$ 

Outso The couple ( logged  $\prod_{i=1}^{n-1} f(x_i, x_i^i) d \in \mathbb{N}$  ) seem where

$$(y) = \frac{\pi^{N}}{\frac{1}{N}} (f, g) (f_{n}^{*} \otimes f_{n}^{*}) \qquad (y) = \frac{1}{N} (f_{n}^{*} \otimes f_{n}^{*}) \otimes f_{n}^{*} (g) \otimes f_{n}^{*} (g)$$

$$(c) \prod_{i=1}^{k+1} f(x,y) (\log \alpha_k) = (c) \prod_{i=1}^{k+1} f(x,y) (dx) 0 \ell$$

| N, GATE-2015 : 1 Mark)

 $9.159\, \text{The directional convolved at the Point at <math display="inline">y_{\rm c} = x^2 + 3 \, \text{MeV}(y_{\rm c}) + 3 \, \text{MeV}(y_{\rm c})$ 

$$\operatorname{sgr}_{\mathbf{P}}(\mathbf{z}, \mathbf{p}, \mathbf{z}, \mathbf{p}, \mathbf{z}, \mathbf{p}, \mathbf{$$

(CE, GATF-2015 : 2 Marks)

- **3.160** C is infligant. My  $|y_{i}|_{Z_{i}} = 6 (\gamma + 3)^{2} \gamma + 3^{2} \gamma + 3^{2} \cos \beta$ , x = x + x = 1 + 2.
  - $(y) = \mathcal{U}_{i}$
- $3b_1/2a$
- $[G, T] = \omega$
- 100 Jr 54

[ME, GATE 8015 · · · Mark ·

- G.181 Let all Hau diffliery smooth lea setunity page. Companient Vice en prolifery encomices for yourself in tion in a linear data example page. With those of the lobosity is an identity?
  - Michigania (para 2)
  - $(0.01166~\mu=0.0224)$
  - $(G) = ((x,y), (x,y), (x^2 + y))$
  - $(y) \| \operatorname{Bet}(\phi V) = \phi \operatorname{Inv} V$

IMF, CA16 2015 ; 1 Mark1

- Q.188 The mean time of the directional conveying of them. If the time  $x^2 + x^2 + 30^2$  in a sweet a country such that  $x^2 + y^2 + 3$  of the  $y \in (x, y)$ 
  - (4) K2
- رون (a) القرار التراري (a)
- $(y) = \sqrt{y}$
- ادي. وي

[IN, GATF-2015 : 1 Wark]

G.168 The value of  $\begin{bmatrix} I_{100} + 3 \sqrt{(\alpha c + 1)} I_{20} + C \sin k \end{bmatrix}$ 

ted are Clark a boundary of the maken poundary as x = 0 , y = 0 and x = y = 0 , y = 0

IME, SATE-2015 : 2 Marks)

Out 64 Table integer to g with  $\frac{1}{2}\int_{\mathbb{R}^3}^{1}(g_{F}) - 3g_{F}^{2}(g_{F}^{2}) = 0$  on the soft in g work as  $g^{2} + g^{2} + g^{2} = g$  is g

IME, GAIS-2015 : 2 Majori

Q.165  $\lim_{t\to 1} \frac{S(t) + -2t}{t - 2t}$ 

105 GA = 2016 : 1 Mark\*

 $Q_{i,j}(\theta) \lim_{k \to 1} \frac{8 \min_{i \in J} \{ 1 \}}{i!} = \dots \ .$ 

[CS, SATE-2115], 1 Mark]

**Q. 167** A scalar period of obeying other properties:  $V\sigma = y\sigma' + x g' + x g' + x g' + x g + x$ 

,  $\sqrt{v}_{P}(\vec{v})$  and consequently  $\vec{v}_{P}(\vec{v}) = \vec{v}_{P}(\vec{v})$ 

Curve a 12 density convey appointing

$$\begin{cases} z = 0 \\ 0 = l \quad \text{or } 0 \le 2l \le 2 \\ z = 2l^2 \end{cases}$$

thought entire integral <u>s\_\_\_</u>

IMF GAIL-S018; 2 Market

 $0 \text{ total} \left\{ n_{\alpha} \left[ \sqrt{q^2} \right]_{1, \beta} + \sqrt{q^2} \right] \right\} > \underline{\hspace{1cm}}$ 

[ N. CATE JOHN | I Mark!

 $O_{\tau}(RR) \prod_{i \neq j} \frac{\operatorname{dig}\left(\frac{\sigma_{i}}{\sigma_{i}} + 4 \alpha\right)}{2^{j_{i}} \left[\frac{\sigma_{i}}{\sigma_{i}} + \frac{\sigma_{i}}{\sigma_{i}}\right]} \cdot \operatorname{sock}\left(\operatorname{ad}\left(\alpha\right)\right)$ 

- وانز
- (t)  $\frac{1}{2}$
- 16) (g)
- ja: T

[MC, GATE-2016 | LVark]

 $\mathbb{Q}(1/0)\sup_{x\to\infty}\sqrt{2^{\frac{1}{2}}(1/x)} \to v(x)$ 

- (a) 0
- (C) + 1
- iv! 2
- | | |

[MR. GMIE-PD18 : 2 Marks]

**Q.171** When is the wall  $y \in \lim_{x \to \infty} \frac{1}{x^2} \frac{1}{y^2} \ge 0$ 

- :11 -
- √ai -1
- (p) 3
- (0) Limit between the confidence

[CL, GATF-2016 : 1 Mark).

- CL 172 Coverage Volkstrig on Europea about allumete i
  - filifiles of selection to the repairs
  - Fig. II fix) is positivated as  $x_i(x) = x_{i+1}$  then if its  $x_i^*(x) = x_{i+1}$  then its  $x_i^*(x) = x_{i+1}$
  - $Q^{-1}M_{\rm s}$  according to a diversity -2 , the minimum of the context -2 ,
  - R = I(R) is differentiable at  $x = x_0$  the Higherton continuous of  $x = x_0$
  - 7) Fix Ind. Gis Lise Rivings
  - (Δ) <sup>Lo</sup> a la ser to a tale, (μs π. c
  - 10) Projesto Girling, Arkidso
  - $27.6130 \pm 2.6484 \cdot 2011.6$

(LO, GATE-2015 : 1 Mark)

Q 173 the cultimetry is welcome for the form

$$\mathbf{r}(\mathbf{r}) = \frac{1^{\frac{1}{2}} - 3x - \frac{5}{4}}{x^{\frac{1}{2}} - 3x - \frac{5}{4}}$$

gatumm sombruke in 200

6-; 4 and 1.

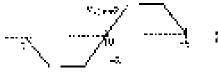
ந்த கொட்<sup>ட</sup>

्रिके के लाहा है

$$|A(t)| = A(cnv^{-1})$$

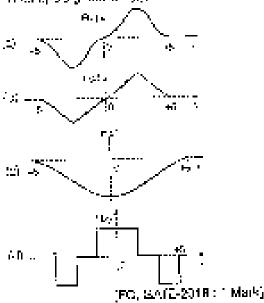
TMF GAIL 2018 A Mark)

G. 174 Glasson neight Arthorate ves tho entire low



 $g_{\rm LDOJER} | c_{\rm LEI} = \int_{-\infty}^{\infty} q_i \phi(\phi) \cdot \phi_i(\phi)$  when the

ି ନା ପ୍ରଥମଙ୍କୁ ଓ ଓ ଗୁ କରେ ହାଲା ଲହିଛି



© 175 let (p) be a polynomial and p(p) = f(x) on (x)definitive, if the dagree of A(t) , A(t) is A(t)given the adgrees of  $(g(x)-g(x))^{1/2}$  ——x

[05] (BANE 2016 - 1 Mark!)

 $\Omega_{\rm c} / 20$  AA a value form in to 10 MeV of the 11 had ightering sessar perside behavior of the lunching

- $p_{A}(t) = r^{A} + 3a^{A} + 13$
- iai  $\eta_{\lambda}(i\gamma_{\lambda})$ as sesimentos iest $\lambda$
- $\hat{\mathfrak{g}}(\hat{\mathfrak{g}})$  (-) indicates, from decreasing the number  $\mathbb{R}^{33}$
- $\mathrm{con}(r(r))$  than coses than increases and асатовыек **+**]а⁄а.
- $\langle J_1, f_2 \rangle$  increases while then deviations 15G, BALL-2018 : : Mark)

 $2.1771 \, \mathrm{at} \, t \, (-1.11) \rightarrow 2.07 \, \mathrm{sec} \, \mathrm{dat} \, 4.35^{3} + 2.5$ , <sub>ee m</sub>artmum yelde oʻr ‰) is t βΝ, ΒΑΙΕ-2016 : Σ Ματκέ).

to 178 The introduction service pleased for the forester  $g_{ab} = g(r+1) \, (a - 2) \, c$  in the Habitan of (1). Then  $\pm$ TUD, CLATE 2016 : n Mark)

Quitto the instrumum salud of the furnition  $\gamma_{M} = \gamma^* + 4\gamma + 2 \cdot \kappa$ ig 2 (fyant o i  $\partial_{x_{i}} \leq \sqrt{-g_{i}^{2}}$  in 175.  $-(\gamma) \Rightarrow (\tau) \cap (u,u)$  $(g) = 2 \left( -2 \pi (0.5) \right).$ rne, GATE-2016 : 1 Me/H]

ള് 180 The quantation option നട്ടിരായി ្សា ្ទា ស្មាន5ត្រាម (ទៅមានមេបាន  $\{x_1 \mid 3x_1 = 5\}$  $(c_1/2)^3 = 8 \times 16^{-3}$  $-(v)/3x^2$  . v $(a_1 + 2a_2 + 3a_3 + 5a_4)$ [CF, GATE-2016 12 Verla]

ន្ទ 181 Thriange (Hirerops, on in the eyees ជាមាន់ប and  $g^* = 4\pi$  of  $g a x^* (0, 0) \approx$ (a) 80° 160 62 ::: **4**0 (CF, GΛ(0-2016 : 2 Varks)

G. 162 have many distinct vertex of a shifted the bound(a risk) =  $\chi(2)$  where  $\chi(x)$  is storically [ (4) € IA, (±) 1 % 000 ± (6) 0 [EC: GAIC-2018: Maik]

 $\omega$  193 $\pi$ m value of the thou tegral  $\hat{q}^{E,Tat}$  where  $\mathcal C$ is a given of radius  $\frac{\pi}{\sqrt{\pi}}$  units  $\Delta$ does,  $\mathcal{P}(x,y) = y(1+2y)$  and if its the  $\mathbb{N}$  NH rangious seamment be out on \$19, 4 ( and long. ) a i amprelerance content to buye  $\hat{i}$  and  $\hat{j}$  are the basis section in the e-probabetion control to- evaluating the Analytical Progress Applies pergavarses in the economic decice so described. (ME, GATE-2016 - 2 Marka)

발. (명) A stroight is electronia for Y Mellery + C casses brough the origin and the point  $(x,y) = \{0,0\}$ The value of a lb\_ JK GATE-2016 1 Mark)

**Q. 186** The alterior  $\int_{0}^{\infty} \frac{dv}{\sqrt{1-u^2}} dv \sin u dz =$ JEO, GA(C-2018 : 1 Mark)  $0.106 \quad \forall \ \Leftrightarrow |u_0| \in \prod_{i=1}^{\infty} \mathbb{I}_{q_i} \otimes \mathbb{I}_{q_i} = \prod_{i=1}^{\infty} |v_i| \times$ 

$$(\kappa) = \frac{\pi}{2}$$

[Ob, GATE-2016 , 2 Marks]

Q.467 A diangent theory is sensitived in the partie should be 2x = 6y, y = 0 and y = 3. The volume appears a complete or analysis of the parties.

[FC, GAIB-2016 : 2 Marks]

G.166 (holdres by sport the value of  $\mu_{\rm S}$  ) as seen that the  $\mu_{\rm S}$  -  $\mu_{\rm S}$  is a

SF [3AT = 2016 ; 2 Marks]

 $2.189 \, \, \text{Tell} \, (\pi^* \, \text{Sym}^*) \, \, \frac{1}{2\pi} \prod_{j \in \mathcal{I}} (r + y + j) \, (\sigma \, \text{sign} \, y + w \, \text{tell} \, y + y \, \text{sign} \, y)$ 

CHI 0500 YIN 180 (\$\hat{3} = y^2 \text{ in each releast 0} \)
[CC, RATE-2018 : 9 Marks)

Sint (19) Supressed The thoick wed burks. He interface the other less than the single part of educations and the second control of t

The value of  $\frac{1}{2}(-y^2) a = x^2 y a y^2 + corr + y + cyronic equation$ 

[50 BATE-2016 9 Marks]

**Q.191** The above the police operateds  $x = x^2 + 1 + 3$  the obelight that x = y = 3 is

- $(8) \frac{36}{8}$
- #5 \_
- $jc: \frac{hi}{2}$
- ::: <del>:</del>

[CE. GAIE-2016 ; 2 Marks].

Distance on specified by  $(n, \# \mathbb{Z}) \in \mathbb{R}$  and a  $\frac{n}{n} \le \phi \wedge \frac{n}{n} \log_{\mathbb{R}} s \le 4 + n, \text{ the photon is approximate.}$ 

1935 v rugge of [FO: GATF-2016 ; 2 Merks]

C. 193 Contage (not a greaty) residen

 $\ell=\pi/(6\cos(n\ell)+2\cos(n\ell))$  in Devisoring Sparson where we call a sension where Wilse to magnify  $\ell=\pi$  and  $\pi$  in the respective  $\ell=\pi$  and which the  $\pi$  and  $\pi$  is a compact when the  $\pi$  and  $\pi$  is a compact, such that  $\ell \approx \pi/\pi$  is  $\pi/\pi$ .

TES, GALB-2016 | | Markin

0.494 The world of the NOT degree with  $a_{\rm min} = 4$  vectors  $a_{\rm min} = f(a_{\rm min}) + 2f(a_{\rm min}) + 2f(a_{\rm min})$ 

- $\{9\}, (6-2) = 2\}$
- $||\hat{J}||_{2}^{2}+||\hat{J}||_{2}^{2}+|\hat{J}||_{2}^{2}+|\hat{J}||_{2}$
- (3) Sun fy + 36)
- 100 Shirt 8/+ 5gc

INV. CATE 2018 : 1 Moral

G. 195 When one of the relowing is a company given solution to the Laptine equation.

- $\nabla^2 \mathbf{r} = \mathbf{p}^2$
- (a) The solutions recovered by important registration.
  Solve the device method beginning as:
- (3) for an injuris the red sections given by a cost of the section - (c) The openions are not by the qua-
- 8.3 the positions are no dependent on the granding regulators.

IEC. CATE SO REA Mark).

Q. 198 The value of the tracking as

$$\int\limits_{\mathcal{U}} (2\pi)^{2} (u, v, 2\pi^{2})^{2} dx + d2)$$

. Notice a constant that the only in (0,0) of the diagram of (0,0) , (0,0) and (0,0)

- ag fo
- (c) P
- 16) d
- (a) 6-

|Eu. GATF-2016 : 1 Mark\*

Q 197 the time integral of the scale flags  $H = 5x (2 + 18)^2 + 2x (1 + x^2) 2x + 2x \sin x \cot x \cos x$ 

(0,0,0) to (1, 1, 1), paramated zero polytically is

[LE GATE-2016 PMarks]

O 1981 Himpoconni i godina bare de nocioser do

Since  $f(x, x) \in H_{\alpha}(y) = e^{-x^{\alpha + 1}}$  is principle.

 $\hat{p}(r) = \frac{1}{2}f(r)\partial x \approx \frac{1}{2}q(x) \text{ for } r$ 

- 151 K 11
- √91.6<sup>-674</sup>
- 6-300
- Maria 1

-[C5, GAπ-2017 : 4 Mark)

G.139 The divergence of the magnet  $|\phi_{\rm s}|=|\gamma_{\rm s}||_{S}$ 

[ME. GATE-9017 ; 1 Mnra].

Q.200 Policy sear elegia. ∏J 609 recome surface is a property of a p<sup>3</sup> , at ± 0 a where p = (x + x) + (x + x) a p = (x + x) + (x + x) a p = (x + x) a d a

G.251 The vs. 
$$f(x) \stackrel{\text{def}}{=} \frac{1}{x} = \operatorname{Sph}(x)$$
 is 
$$(x) = 0 \qquad \qquad (x, \beta) = 0$$
 
$$(x) = 1 \qquad \qquad (x) = 1$$
 
$$(x) = 1 \qquad \qquad (x) = 1 \text{ Mark }$$

© 209 Alica amobile curva coffice by

$$\frac{1}{2} = \frac{2 \log \left(\frac{\pi Q^2}{2}\right) \sqrt{4\pi} \sin \left(\frac{\pi Q^2}{2}\right)}{(2\pi)^2} = 0. \text{ The range}$$
 (i.e.,  $\alpha = 10$  rotate Liebenn from existing 250. Here we have  $\alpha = 10^{12}$ 

Q.800 Fig. in a sector  $|\vec{v} - 2y\vec{z}| + 2\pi \hat{j} + 8xy^{4}$  . The

$$\operatorname{value}(\phi) = \operatorname{val}(\phi \times V_{\phi}^{0}) \cdot \mathbf{s} \subseteq \mathbf{s} = \mathbf{s}$$

ME. GATE-2017 2 Marks),

$$5.204 \pm 0.3$$
 s. in that there is a fall one for a point of a  $10^{6}$  can for  $\pm$   $100$  matrix  $\theta$  =  $100$  can for  $\pm$   $100$  s.

Q 906 The alighents when the versions  $X_1$  in [3.0]  $x_2^2$  and  $x_3 = [-12.8] \cdot 6^{-1}$  in radiant is  $\frac{1}{1000}$ . No CATE-2317 (12 Meres).

<u>Q.996</u> Ferbiand vibornæyer- saffary ng the <sup>†</sup> éreding eg laters

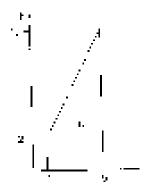
Q 207 (  $m \mathcal{G} = 2y + 1 + 2 \text{ md}/2x + 9 = 5$  ) the value

2.206 Let 
$$q(x) = \begin{cases} -1 & -1 \\ (+1 - x)^2 \end{cases} Sect q(x) = \begin{cases} -1 & x > 0 \\ x^2 & x > 2 \end{cases}$$

Consider the composition of two tiples  $(\log k + \log \log k)$ . The number of disconunctive  $(\log k + \log \log k)$  and  $(\log k + \log \log k)$ 

[EF GAIL 2317 : 2 Marks]

0.833 Let 
$$i = \int \int_{\mathbb{R}^2} e^{i\phi} d\omega d\phi$$
 , where this its region shows in the liquid and  $\phi$  . Bix.  $\mathbb{C}^4$ . The value  $\phi''(\phi)$  and  $\phi''$ . (Shot the subset in protein characteristic blocks)



jeE\_GATE-2017 : 1 Mark)

Q.210 A. Juneton 
$$f(z)$$
 is defined as  $f(z)$ 

$$\frac{e^{2}}{1+e^{2}} = \frac{x < 1}{1+e^{2}} \text{ where } x = 2 \text{ Without}$$

and or the fill owing state. Applied 1987, 90, 114. B NGT afford to 16. The will be stated in a state of a state.

- (6) (15) e la combacte si em l'or ties (阿原 gages (Lottos))
- (c)  $\varphi(x)$  is a (horostrative since Tileral Tile value)  $\varphi(x)$  in this condition  $x \in X \to X$
- (c) f(x) is all leading to be strong that all variables against x

JEF GAIL S017 - 2 Merks)

Q.81). The solution ships (in degrees) hardoon the same x + y + y = -2x (2x + y) + 2x = 0 is

[EG, GALE 8017 - 5 Merk].

C.212 The minimum small control is  $g(x_1,y_2) = \frac{1}{\pi} g(x_1,y_2)$ 

in the interest = 100 g  $_{\rm A}$   $_{\rm C}$  (not explain  $_{\rm C}$   $_{\rm C}$ 

EO BATE-2017 (2 Varia)1.

 $Q_{\rm c}^{\rm colo}(3)$  The colors of , so  $_{\rm TO,ARS}(1)$ 

$$\left[ \int_{0}^{\infty} \frac{d-\mathbf{y}}{(d-\mathbf{y})} d\mathbf{y} \right] d\mathbf{x} \quad \text{and} \quad \int_{0}^{\infty} \left[ \int_{0}^{\infty} \frac{\mathbf{y}}{(d-\mathbf{y})^{2}} d\mathbf{y} \right] d\mathbf{y}$$

(Міратта жі қі едидіга (15)

Йу батажың ерда Ташбірі

(a) 0.5 on t = 0.5 respectively.

27 - 2.5 and the season kely

[LC GATF-2017 : 2 Marks]

Q 214 - the recont invelop

 $\tilde{P} = \Theta_{\tau} \left( \tilde{P} p^{\tau} + \tilde{\alpha} p \tilde{\pi}_{\tau} + \Theta_{\tau} \left( \tilde{\alpha}_{\tau} q_{\tau} + 2 \tilde{\pi}_{\tau} \right) + \tilde{\alpha}_{\tau} \left( \nu_{N} p_{\tau} + \tilde{\pi}_{\tau} \right) \right)$ is improving their the values of the constants  $\hat{x}_i \in \{0.00,0\}$  respectively and

(9) U.D. 19,5 (6.5)

- fat do 2.3 s.:

1 (0.000 c.23 in 5 ) ight 10, 25, 5.3.

[EC GATE-2017 , 2 Vertex]

D 215 : eta = ∫(255), t Syriy - 255; evitorou, y, v a e

real on the Cibethal weight Indoor has I from com 4 (0.3 m septim 5 (4, 4,  $-\frac{1}{2}$  H  $_{\rm FASUC}$ // to \_\_\_\_

TDC: SATE-2017 : 2 Market

Q 216 act  $\ell(s) = e^{s^2 + s^2}$  is replain. From arrong the to localing indicesse the Taylor serves of partial relican of  $\partial x^{\prime}$  amino x=0 with includes  $a^{\prime}$  and  $a=a_{0}a_{0}$ of hilless factors requal miles

$$(4n(1+\gamma) \cdot n^2 + 4n) = (6n(1+\gamma) + \frac{6}{6}x^2 + \frac{1}{6})$$

$$0.17 \pm \lambda = \frac{9}{9} x^2 + \frac{7}{9} x^4 + (c) = \pm x \pm 9 x = 7 x^4$$
[EG GATE-901] 2 Warks]

0.217% libres discontinual region of  $\mathbb{R}^4$  and so that s detroit en by

$$x^2 = y^* \le y^* : y < y \le z$$

wither it are real throughout or A (no po wa (Burilli pia e<sub>s</sub>) is <u>.</u>

[FO CAT = 2017 - 2 Marks,

$$\|\widehat{G}(S)(R)\|_{L^{2}(Y)}=\widehat{G}(R)\left(\frac{\pi_{1}}{2}\left[-\frac{1}{2}\left(r\right)\right]_{2}\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1}{2}\left(r\right)^{2}+\left(\frac{1$$

 $\int d^3r/2h = \frac{2H^2}{\pi} \cdot \text{ then the constants in and } R$ 

$$(c) = \frac{1}{r} Z(r(1))$$

$$(c) = \frac{1}{\pi} Z(dt)$$
  $(c) = \frac{d}{\pi} \log dt$ 

USE GATL SD 7: 1 March

**O.918 T** is yours of  $\lim_{t \to \infty} \frac{x^2 - 2\sqrt{t} - 1}{1 + 2\sqrt{t}} = 2$ 

(2.8)

(c) a 1

ut; Tu⊷a notica si

[CS, GATF-2017; 2 Market

**G.2201** et  $\mathbf{w} = f(\mathbf{r}, \mathbf{v})$  where  $\mathbf{x}$  and  $\mathbf{y} \mapsto \mathbf{p}(\mathbf{r}, \mathbf{v})$  .

of filtran, according to the clean rate,  $\frac{\partial x}{\partial x} |_{\mathbf{K}}$ 

$$(4) \frac{\partial dv}{\partial v} \frac{\partial h}{\partial t} = \frac{\partial dv}{\partial v} \frac{\partial t}{\partial t} - (40) \frac{\partial dv}{\partial v} \frac{\partial h}{\partial t} + \frac{\partial W(u)}{\partial v} \frac{\partial v}{\partial t}$$

$$\frac{\partial v_{1}}{\partial z} \frac{\partial v_{2}}{\partial z} \frac{\partial v_{1}}{\partial z} + \frac{\partial w}{\partial x} \frac{\partial v_{2}}{\partial z} \frac{\partial v_{2}}{\partial z} + \frac{\partial v_{2}}{\partial x_{1}} \frac{\partial v_{2}}{\partial x_{2}} \frac{\partial v_{2$$

(CE, B.XIF-9017 : i Mark)

**Q.52** \* Prairiseroonse shifte reclaime division  $(-1)^{2}$ . <sup>ев</sup>януя 1, кня 2 и ш<u>е</u> в <u>—</u>

ISE GATE-2017 III Marki

 $D^{199}2.T < \varpi$  ngcmit stretowycznego a $_{19}$  py  $_{p=-1,2}$  . a recurred to nave not not not an addition, asks. The department of the tangent point wild to the

(4) (1, 3)

0:31-12

22 (47.72)

IOE GATE-001/ 12 Verkall

0.998 Cosuperato Musicipi cetta la in-gra-

$$1 = \frac{1}{2} \frac{(n)^{-1} z_1^{(2)}}{(n)^{-1} z_1^{(2)}} \cdot 0 z$$

The value of the integral of

$$\begin{array}{ccc} x^{0} & x^{0} & & & \\ 0x & & & \\ 0x^{0} & \frac{\pi^{0}}{78} & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & \\ & & \\$$

TIE, SA E-2017 | 2 Marks]

gussa Two com e o lu €rate mortogra a tarti tJ tracs yanilades y ily lem todas. Assid 6. ±61 no gner ye (gles am ucho the t⊷ k our rgime programme controllers where the distance gaveled dynight is official traces; Ar light , i∔ withit as are given 4%

- B : A = 200
- 9 8-00.1

Withouther had on a hours are maken um 50000 proposed was life.

- gar 15 km et 3 tien elle 5
- ithi Bismis, 15 i in ma
- 411 St. um (g. (d) 10 0.003
- (a)  $20 \, \mathrm{km/g} \, \mathrm{J} \, \mathrm{30} \, \mathrm{model} \, \mathrm{A}^{-1}$

јон, <u>G</u>ATE-2017 : 2 Marks!

$$5.225 \, \frac{3.0 \, (3000)}{1.0 \, (1.3)} \, \mathrm{tr} \, \, \mathrm{outstill} \, \, \mathrm{coul}$$

ICE, GATE 9317 : 1 Mark

 $\simeq 226$  by Min Humberson of the history

$$f(x) = \left(\frac{1}{2} \int_{0}^{1/2} e^{-x} g(x) dx + \frac{1}{2} \int_{0}^{1/2} e^{-x} g(x) dx +$$

- (x) x = -1
- $(P) \wedge \{0\} \qquad \text{for } s = \frac{2^{n}}{1}.$

ESE Prejins-2017

 $_{\rm G,227} \equiv e$  value of the median  $\int_0^{2\pi} \left(\frac{2}{2\pi i t^{1/3}}\right)^2 d\theta / dt$ 

- $w! = \frac{y_1}{y_2} =$
- $|\psi\psi| \ge \sqrt{10} \, a.$
- $(x_1, x_2^{k_1}) \in X$
- 200 24

[ESL P;e] ma-2017].

Attis			coluc	_		•						_					
4	ís:	2.	Da.	ö	(a)	4.	iai	5.	:=.•	a.	(el	7	; :1	Ľ.	[#];	S	21
10.	:5)	11.	ío:	-2	÷e.	۴۶.	;- <u>i</u> i	14.	ia;	15.	160	- <b>F</b> .	יב	! 7.		. Li	71
13.	34.	20.	;5I	21.	( <u>=</u> )	22	124	23.	ψŅ	2£.	ir (	2E.	]: <b>1</b> :	76	0.	27.	Эн
28.	J!	29	1	33.	ıbj	ot.	65)	<u>82.</u>	íby	83.	::·	34.	Ġ.	J5.	15.	36.	101
57.	ņot	38	.21	33.	le;	43.	įκ;	41.	:F;	12.	[5]	43	(L)	44.	ų į	65.	ir:
40	14.	47,	ibi	48.	:si	49.	úr)	50.	::::	5-	(*)	52.	12!	5.3	: · ·	<u></u> .	1: ;
55	li )	5ä.	Фò	ŧ7.	:::	58.	171	59	-5	5E.	(9)	61.	96%	62.	!c]	83,	: :ui
₹1.	(3)	85.	(U)	ĒĒ	Û	<b>67.</b>	(A)	BU.	3.3	49.	JD1	<b>7</b> 0.	:::1	7	÷ū	72.	
73.	77	74.	:=:	75.	ψı	76	.n;	77.	<u> </u>	79.	ır.;	76	:=:	P.C		Б1.	
Б. <b>7</b> .	;	89	25	9a,	(E)	95.	(d)	89,	ilej	87.	n,	RF	<b>:</b>	00.	(a)	5Ç	
21	ic.	32.	(d)	93.	lej	<b>9</b> 4.	ψņ	80.	ıtė	96.	:ui	97.	ie.	99.	φ.,	θH.	· ••••
160		101.	(b)	102.	::::	109.	đ, j	104.	(a)	100.	i.s;	106.	(d)	137	ó, fi	. 86	6.6
150.	::	113.	aar	11.	ja:	112.	:=1	113	igi	1.4	-:	714	(56	118.	P2:	117.	( <u>.</u> )
119	. 1:	110.	( <del>-</del> 0	.50	÷ ;	123.	(2)	124	<b>3</b> 3	125	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	129.	ķ;	127.	:1:	129.	
131.	-	153.	14	194,	(L)	185	191	136.	ψ	107.	iPil	138.	:21	159	(s)	I±3.	14]
<sup>1</sup> 41.	•	142	(F)	140.	(3)	144	(c)	145	<b>0.</b> :	IAE.	Ģ;	47.	:::	146.	:::	144,	!зі
151	•	157.	(4)	153.	(aj	154.	io!	159.	163	180.	iui	£1.	; á	102	25	169.	(m)
170.	•	171,	íty	172	303	173.	į:	174.	:eji	- <b>7</b> 6.	;n;	179	<u>;3</u> :	IRC.	: <sub>11</sub>	3E 1.	: ::
182.		188.	(c)	-61	;n:	104.	ác)	5 <del>5</del> .	( <del>4</del> )	156.	:::	198	(a)	201.	<sub>(</sub> d)	202	·-·
208.	•	£ 10.	:- <u>i</u>	8.E	ů.	214.	(8)	5-8	::•	<b>9</b> -8	No.	219.	ů:	223.	IC;		:-: :-:
723	មែរ	224	W	29 <u>6</u> .	134	227	-1										

# Explanations Calculus

$$\frac{1}{1 + \frac{2\pi^2 x}{1 + \frac{2\pi^$$

2 (6)

Solution by Sportmatz Geometry

This is been can be considered in Co. Chate gase at grown to of the glove COS.

 $(2.95)^{12}(3-2-1)$ 

(3.1, 2, 4)

ni2 1.−2:

000 n 00

된 umanal durie OCP ×

$$\begin{vmatrix} x_{1} & x & y & -xy_{1} \\ x_{2} & x & y_{1} - y_{1} & 5 & 7 \\ y_{2} & x_{2} & y_{3} - y_{1} & 2y_{1} & 7 \\ y_{2} & y_{3} & y_{4} - y_{1} & -y_{2} \\ 1 & 3 & 4 & -y_{3} \\ 0 & 2 & 2 & -y_{3} \end{vmatrix}$$

ist file 20 to = 0

Now it dies also of  $(x_1,y_1,Z_1)$ 

 $-yv_1 \le v + yv_2 = xv = xt = 0 = 0 \le yv_2 = 0$ 

$$\left[\frac{2m_1^2 + 5y_1 + 6x_1}{\sqrt{x^2 + 0^2 + 0^2}}\right]$$

Therefore, it obtains of  $\{0, -2, -1\}$  for plane the  $-2\phi$  to  $\phi$  if  $\phi$ 

$$\frac{2s(S-2)\cdot (-2)+(-1)}{\sqrt{2^2+(-2)^2}+(-1)}=2.$$

3. (b)

$$f(x) = \lim_{n \to \infty} \left[ \frac{x^2 + x^2}{2x^4 - 7x^4} \right]$$

Chaps have that  $\frac{1}{2}$  from , that can be found by

representacy frodomorus i losto els pris.

$$\begin{split} \phi(t) &= \frac{1}{2} \frac{\left[ -\frac{1}{2} \sqrt{2} + \frac{1}{2} \cos \frac{1}{4} \right]}{\left[ -\frac{1}{2} \sqrt{2} + \frac{1}{2} \cos \frac{1}{4} \right]} \\ &= -\frac{1}{2} \frac{\left[ -\frac{1}{2} \sqrt{2} + \frac{1}{2} \cos \frac{1}{4} \right]}{\left[ -\frac{1}{2} \sqrt{2} + \frac{1}{2} \cos \frac{1}{4} \right]} \\ &= \frac{\left[ \frac{1}{2} \sqrt{2} + \frac{1}{2} \cos \frac{1}{4} \cos \frac{1}{4} \right]}{\left[ \frac{1}{2} \sqrt{2} + \frac{1}{2} \cos \frac{1}{4} \cos$$

4. (a)  $\frac{d_{1}(x_{0})}{d_{2}(x_{0})} = x + a(\theta - \sin(x)) y + 2\theta + \cos(\theta)$   $\frac{d_{2}}{d_{2}(x_{0})} = \frac{d_{2}}{d_{2}(x_{0})} + \cos(\theta) + \frac{d_{2}}{d_{2}(x_{0})} = x + a(\theta)$   $\frac{d_{2}}{d_{2}(x_{0})} = \frac{d_{2}(x_{0})}{d_{2}(x_{0})} + \frac{d_{2}(x_{0})}{d_{2}(x_{0$ 

5 (c) Fulling f(x) = 0 at -3x + 3b = 0  $5x^2 - x - 0 = 0$   $\Rightarrow -x^2 - 3 - 0 = 0$   $\Rightarrow -x - 3 + 0 = 2$ Now f(3) = 32 + 0 + 600 $\Rightarrow -1 - 25 + 20 = 0 + 200$ 

F.

(0)

 $\begin{aligned} \rho &= \frac{25 \pi c^{2}}{5} \int_{0}^{\infty} \int_{0}^{\infty} \frac{1}{25 \pi c^{2}} ds \cdot ds \cdot ds \cdot ds \cdot ds \cdot ds \\ &= \int_{0}^{\infty} \int_{0}^{\infty} \int_{0}^{\infty} \frac{1}{25 \pi c^{2}} ds \cdot ds \cdot ds \cdot ds \cdot ds \\ &= \frac{1}{3} \frac{1}{3} \int_{0}^{\infty} \left( \cos s \cdot s^{2} ds - \frac{1}{3} s^{2} \right) ds - \frac{\pi}{2} \end{aligned}$ 

 $\frac{1}{2} = 0.088(-0.900) + 0.8$   $\frac{1}{2} = 0.281(+0.986) + 0.8$   $\frac{1}{2} = \frac{1}{2} \frac{1}{2} \cos 30$   $\frac{1}{2} = \frac{1}{2} \frac{1}{2} \cos 30$   $\frac{1}{2} = \frac{1}{2} \frac{1}{2} = \frac{1}{2} \cos 30 + 0.8 \cos 30 + 0.8 \cos 30$   $\frac{1}{2} = \frac{1}{2} \frac{1}{2} \cos 30 + 0.8 \cos 30 + 0.8 \cos 30$   $\frac{1}{2} = \frac{1}{2} \frac{1}{2} \cos 30 + 0.8 \cos 30 + 0.8 \cos 30$ 

$$\frac{1}{\sqrt{3}} \frac{\cos \theta - \frac{0.990 \times 5.779 + 0.908}{\sqrt{3} \times 37} + 0.908}{\sqrt{3} \times 37}$$

$$\frac{1}{\sqrt{3}} \frac{3.239}{\sqrt{3}} = 100$$

#### ч. रता

Since the position of the length of Sind kind in body. and offermalishing full buomit determine by Leggrangian ⊞600 salt e droorem

Allowereda to Saulings.

$$\begin{aligned} S(\theta) &= \kappa(\eta) + \frac{S(\theta) - 3(0)}{8 - 0} = \frac{1280 - 10}{18 - 10} \text{ to dec} \\ &= \frac{280}{8} \text{ tolked} \\ &= \frac{280}{8} - \frac{3800}{1200} \text{ kg pl} = 128 \text{ simple} \end{aligned}$$

energies) is the valor to observe sall engine.

## ∃.

Siver function have eighted specify are neltend. тус я срыт —ve halt до 15 гайны фатенсово a satisfied by too



## 10. (d)



20 ama of the condition  $V = \frac{1}{2} \Lambda d^2 N$ 

선 교 설명 (24)

$$V = \frac{6}{3} (2^{4} + n^{2}) n + \frac{3}{2} (2n^{4} + n^{4})$$

$$\frac{dV}{dx^{4}} = \frac{6}{3} (2^{4} + 3n^{2})$$

$$\frac{dV}{dx^{4}} = 0$$

$$V = 0$$
In this way and most not  $x^{4} + 3/2 = 0$ 

$$h(x,y) = 0$$

$$h = \frac{4}{2}, 0$$

$$12 = \frac{3}{2}(3 + 6x)$$

$$P = 0, 02 = \frac{2}{3} \times 0 \text{ mink}$$

$$P = \frac{7}{3} : 02 = -\frac{4}{3} \times 0 \text{ mix mink}$$

 $\sim$  VCI in Alix metal numbers on  $x = \frac{4}{2}$ 

# $H_{i}$ (4)

$$\begin{aligned} f(x) &= x^{2} e^{x^{2}}, \\ f(x) &= x^{2}(-x^{2}) + e^{x^{2}} \times f_{X}, \\ &= e^{x^{2}} \cdot f_{X}^{2} \times e^{x^{2}}. \end{aligned}$$

Pulling G(r) = 0.  $9.7(2) \cdot ... = 3$  $e^{-i\phi} \circ (2-i\phi = 0)$ 1 – 0 91х = 2 в строя ність у регов

 $f''(x) = 6^{-1}(2 - 2x) + 672 - 274(-4)^{-1}$  $= 2 \times (2 + 2x + (2x + x^2)).$  $= H^{\infty}(1 + \epsilon (\gamma - 2)$ 

 $m \in \mathbb{C}(\mathbb{R}(0) + s^{-1}(0) + 2 + s) = s$  Since  $\mathbb{C}(0) + 2 + s = s$  we have a trian aNow of  $\epsilon = 2\delta'(2) = p/\epsilon (2k + k \sqrt{2} + k \sqrt{2})$  $-e^{-2\pi i k}(k-k-k') = -2 > k < 0$ 

all r = 5 well area consumptions

# 12 - (c)

$$S = \frac{\pi}{41} Y^{\frac{1}{2}} Q_{x}$$

$$= \left[ \frac{x^{\frac{1}{2}}}{2\pi} \right] + \left[ \frac{1}{2x^{\frac{1}{2}}} \right]$$

$$= \left[ \frac{1}{2x} - \frac{1}{2} \right] = \frac{1}{2}$$

# 13. (4)

 $I = \prod_{i \in \mathcal{I}_{A}}^{n-1} \widetilde{\theta}_{i}(-\varphi) d\varphi d\varphi.$ 



Now 
$$\frac{1}{\sum_{j=1}^{n} \frac{y-1}{y}} = \sum_{j=1}^{n} \frac{y}{y} = \sum_{j=1}^$$

14. (a)

and 
$$\begin{aligned} \frac{\partial u}{\partial u} &= u - \frac{\partial v}{\partial v} = 0 \\ &= \frac{\partial y}{\partial u} = -\frac{y}{u^2} \\ &= \frac{\partial y}{\partial v} = \frac{1}{u} \\ \partial y &= \frac{1}{u} \\ \partial y &= \frac{\partial v}{\partial v} \\ \partial y &= \frac{\partial v}{\partial v} \\ \partial y &= \frac{\partial v}{\partial v} \\ -\frac{\partial v}{\partial v} &= \frac{\partial v}{\partial v} \\ -\frac{\partial$$

ΙĿ (0.)

$$y = \frac{\lambda^2}{9} + \frac{\lambda^2}{8}$$

$$qrop y = 3\frac{4n}{8p} + i\frac{dn^2}{8p^2} + \lambda^2 + \frac{\lambda^2}{8}y^2$$

$$A(0,3), gross y = (10 - \frac{3}{8}) \log y = 2 + 30$$

$$|\mathbf{q}| \mathbf{g}(y)| = \sqrt{2} + 2^2 + \sqrt{5}$$

'Е (4)

$$\hat{t}_{j} = 2\pi j p x \cdot \hat{t}_{j} = x^{p} \cdot \pi^{p} + x^{2} x$$

By infograntia, wolue:

2 – Parentio Linction of 2 = 2 ∞.  $\lambda_{i}$  in a imaginal orange vector bundle or from each ,  $\lambda_{i}$ ស្ត្រីខ្លួន មុទ្រាប់គឺ។ រូបនេះ

$$\begin{split} & \tilde{\rho}(\tilde{n}) \sim \tilde{\rho}(\tilde{n}) \\ & = \left( \tilde{\rho}^2 \varphi_1 \right)_{1/2} + \left( \tilde{\rho}^2 \otimes \tilde{\eta}_{3/2} \right) \\ & = 1 - 0 = 1 \end{split}$$

17. (G)

Çryşı'ş I eş remi-

$$\begin{split} \oint dk \, dk + k \, dk &= \int \frac{\partial}{\partial \mu} \left[ \frac{\partial \psi}{\partial k} - \frac{\partial \psi}{\partial \mu} \right] \, \partial \nu \, d\nu \\ &= \frac{\partial}{\partial \mu} \left[ - \frac{\partial}{\partial \mu} \partial \mu \right] \, \partial \nu \, d\nu \end{split}$$



 $= \frac{1}{2} (-\gamma^2) v^2 v + (vy) v y$ 

$$\begin{aligned} \psi &= -y^*, \ 0 = vy \\ \frac{\partial \psi}{\partial x} &= y_* - \frac{\partial \psi}{\partial y^*} = -2y. \end{aligned}$$

$$\begin{aligned} F &= & \int_{-\infty}^{\infty} \int_{0}^{\infty} \left[ |y-1| | 2y \right] | dx | dx \\ &= & \int_{0}^{\infty} \int_{0}^{\infty} |Jy| dx | dy \\ &= & \frac{1}{2} \left[ 2|xy|^{2} \right]_{0} |xy| + \frac{1}{2} 3y dx + \frac{2}{2} \end{aligned}$$

19. (y)

A im mogni and a sur accinieg at kile stell y Bia sa sancordin.

9. (b)

$$\lim_{t \to 0} f(t) = \int_{0}^{t} \left\{ \frac{2x^{2} - 7x - 3}{5x^{2} - 2x - 3} \right\}$$
and the Bourtz Lagrange,  $\pi$ 

Here the Roman transfer for  $m = \frac{(0.1)}{(0.1)}$ 

35, applying 15-begins 8 6 to

$$\int_{1}^{\infty} \frac{4x^{-2}}{(1x^{-1}2)} = \frac{\pi}{48}$$

20. (**n**)

$$|\mathcal{T}_{\mathcal{A}}| = \frac{g'(1-g') + g''}{(1-g)^2} = \frac{e}{(1-g)^2}$$

Since we is a vector of, values of  $v^{-1}(x)$  is  $-v \wedge \nabla t$ all values of cland hence (1) more than six Pictorses.

$$\begin{aligned} & \left[ \frac{\partial}{\partial t} \cos \theta - \left[ \frac{\partial}{\partial t} \cos \theta \right] \right] - 2\partial \theta \cos \theta + \frac{\partial}{\partial t} - \frac{\partial}{\partial t} \cos \theta + \frac{\partial}{\partial t} - \frac{\partial}{\partial t} \cos \theta + \frac{\partial}{\partial t}$$

## 22. <u>(</u>6)

$$J = \int_{\mathcal{C}} S \, \Gamma^2 \, \theta \cdot Q' \, d$$

$$\int_{0}^{\infty} \left| \cos \left( \theta \right) s \right| ds ds$$

$$\omega_1(t) = 0$$
  $t = \exp(t) = 0$ 

$$a..0 = \pi_{e,0} = \cos \pi = -1$$

$$F = -\frac{1}{4}\left(1 + \frac{r^2}{2}\right)\alpha^2$$

$$= \left[1 + \frac{r^2}{2}\right]^2 + \left[1 + \frac{1}{4}\right] \left[1 + \frac{1}{4}\right]$$

$$I = \frac{3}{3} + \frac{3}{3} + \frac{1}{3}$$

### 22 (d)

Area common to a rela-

### 24

We can do not use (s) and (display because Less contains cotton and a waist 4,5 Thjegration ing integrating adulted pati

15% A H. W. M. Everund of a control

#### 25 (d)

$$\begin{aligned} u &= \sqrt{2} g_{R,2} & g + 1 + \sqrt{2} g_{R,2} \\ 1 &= \sqrt{2} g_{R,2} & g + 1 \\ &= \sqrt{2} g_{R,2} + 1 \\ &= \int_{0}^{\infty} (2\sqrt{2} \cos \theta + 2)^{-1} \sqrt{2} \sin \theta + 5 + 3g_{R,2} \\ &= \int_{0}^{\infty} (2\sqrt{2} \cos \theta + 2)^{-1} \sqrt{2} \sin \theta \cos \theta \end{aligned}$$

$$\begin{split} & 2 J Z(s, n \theta) \bigg[ \int_{0}^{\infty} - 2 \sqrt{3} t - 2 J z(t) \bigg] \bigg]_{0}^{2\theta} \\ & = 2 J J J (s n 2 t - s n 0) - 2 J Z(t c s 5 t - s n 0 0) \end{split}$$

$$z = 2z^2 + 3z^2 + z^2$$
,  $E(2, 1, 3) \ge -z + 2z$ 

$$\forall x = i\frac{\partial x}{\partial x} + i\frac{\partial f}{\partial x} = K\frac{\partial x}{\partial x} = K_{AB} + K(x) + 2\kappa k$$

directional convettive or fill of the lens live gra-

$$\mathbf{H} = \hat{\boldsymbol{\beta}} - \Delta \mathbf{A} \cdot \mathbf{B}$$

rial ingrauthers are menual another the error and

of vector a and algorithm  $\frac{\pi}{2}$  . They  $\delta$ 

$$= \left| \frac{e^{-2S}}{\sqrt{2^2 \cdot e^{1/2}}} \right|^2 (2e + 0) + 6N$$

$$= \frac{1}{\sqrt{2}} (1.8 + 0.64 + (-9.6))$$

$$= \frac{2}{\sqrt{2}} = 1.799$$

# 27. [5]

Give 
$$1 - \frac{1}{2}(r) = (r - 0)^{2/2} + 1$$

$$\mathbf{r}(r) = \frac{2}{r} (x - 8)^{r+2}$$

Seve or langematics of (0, 4):

$$m = \frac{2}{8}(g - \theta)^{-1/2} = -\frac{2}{8}$$

និសាម ម៉ោកក្រុម ទី, ស្វារ ម៉ែង។

$$u_{+} = -\frac{1}{2} - 3$$

ະຖາກະຕານໃດບານສູ່ຂຸດຖາດ(U.b)

$$y = 5 - 3(y + 6)$$

#### 26 ंधी

en Plumatique (y pilvector thale arequer

$$A \times (B - C) = (A - C) B - (A + L) C +$$

Hild politing. 
$$A = V + B + \nabla \cdot S + C + B$$

We get 
$$v = v \vee \mathcal{F} = (\nabla \cdot \mathcal{F}) v \cdot (\nabla \cdot \nabla)^{12}$$

$$(-\nabla \|\nabla \cdot v^2\| + \nabla^2 v^2)$$

$$\{[(\nabla \cdot v) | as = v)^* | av = \{stokes \top | ersen \}$$

30. (L)

This is on the form of  $\begin{pmatrix} \frac{1}{2} \\ \frac{1}{2} \end{pmatrix}$ 

Applying bill capital tule

$$\coprod_{n \to \infty} S^n = \frac{1}{1 + n} + \frac{\sqrt{n^2 - 1}}{2} \left( \frac{\Omega}{2} \right)$$

91. (e)

$$\lim_{\delta \to 0} \frac{2^{-N+1} \left[\frac{2}{2}\right]}{\ln 2} = \frac{1}{2} \lim_{\delta \to 0} \frac{\sin \theta / 2}{0 / 2} = \frac{1}{2} = 0.5$$

82. (a)

$$U(ver), \qquad y = x$$

$$\omega = -\frac{\partial v}{\partial r} \cdot 2r \cdot f \log r \cdot 0$$

$$\Rightarrow \frac{e^{2\delta}y}{\delta e^2}\bigg|_{z=0} = 2 \text{ which its } t \forall t$$

so we have a loss to simple t=0.

-,-

$$x = 0$$
,  $y = 0$ 

solution x = 0 + [1, 5].

it is not a parel colored in the context main that range

 $A_{i,j} \mapsto e_{i+1} \circ \cdots \circ v = 1$ 

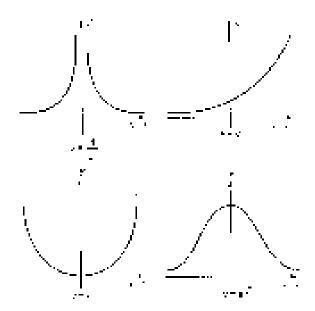
$$p = 1$$

at second or dipolar, x = 5.

de laborate minimum value al function in (1,0) is  $\mathbb{N}_{+}$ 

35 (d)

es. Elem ovig apas a Sew wheth spellamotive of relationly pourced



34 (a)

$$H_{2}^{2}\big)=\frac{1}{2}(1+2)(2+2)(1+2)$$

$$f(x) = 3x = 0$$

$$|\mathcal{P}'(\frac{1}{2^n}) - 2^{-n} \ge 0$$

$$do at = -x + \frac{1}{2},$$

westweet can firm to so his is retailed to the issuer on langer 4,41

$$f_{\text{con}} = 6(-1) = 18$$

$$f(14) = 10$$

3L (a)

) is Taylor's the respect that of first a Kosta in  $\pm 210$ 

$$f(x) = f(f) + (r - 2) f'(2) + \frac{(r - 2)^2}{24} f'(2).$$

l or Instancepproximation we lave a latinative H=3. Identificance get

$$I(S) = I(S) + (s - S) I(S).$$

$$\exists A(x_0) = f(x) = g(f(x) \circ f(x)) = -g(f)$$

$$\gamma = -2(1 + e^{-\frac{1}{2}} + (\mu - 1))(1 + e^{-\frac{1}{2}}) = (2 + \pi) e^{-\frac{1}{2}}$$

26 (Б)

ucustos of ire will superfland a merceontali a

$$v=x-1$$

$$r = \int_{0}^{2} x \, dx = \int_{0}^{2} (3+1) \, 2x$$
$$= \frac{(x-1)^{\frac{3}{2}}}{2} = \frac{1}{2} (3-x) = 2.5$$

**37.** (c):

From Clarine W. AR Fig. | dipagger adam,

$$SAA = \frac{GN}{|\Delta Q|} - |\Delta Q| = |\Delta D| \otimes AN.$$

After the  $\Delta \Delta \Delta E = \frac{1}{2} |\Delta P| \approx C M_{\odot}$ 

$$=\frac{1}{2}A\tilde{\mathbf{n}}\cdot\tilde{\mathbf{A}}\tilde{\mathbf{C}}_{i}\cdot\tilde{\mathbf{n}}\cdot\tilde{\mathbf{A}}=\frac{1}{2}\overline{A\tilde{\mathbf{n}}}\times\overline{2\tilde{A}^{i}}$$



rom above tig we have  $\overline{\mu}(x) = \overline{\mu}(x) + \overline{\mu}(x)$ 

kaname at ka⊞CLL (b) Bi√(5 lb)

$$= \frac{1}{2} | (\overline{g} - \overline{g}) \times (\overline{g} - g) |$$

Cikitia-10) sicorrect.

₹ħį 38

$$O = \left[ \begin{array}{ccc} O = \left[ \begin{array}{ccc} x & x & x & y \\ y & y & y & y \end{array} \right] \end{array} \right]$$

$$\begin{aligned} \mathbf{r} &= \mathbf{x}_1 \cdot \mathbf{r} + \mathbf{x}_2 \cdot \mathbf{r} \\ \mathbf{r} &= \mathbf{r}_1 \cdot \mathbf{r} + \mathbf{r}_2 \cdot \mathbf{r} \\ \mathbf{r} &= \mathbf{r}_1 \cdot \mathbf{r} + \mathbf{r}_2 \cdot \mathbf{r} \\ \mathbf{r} &= \mathbf{r}_1 \cdot \mathbf{r} + \mathbf{r}_2 \cdot \mathbf{r} \\ \mathbf{r} &= \mathbf{r}_1 \cdot \mathbf{r} + \mathbf{r}_2 \cdot \mathbf{r} \end{aligned}$$

$$\begin{aligned} D &= \frac{\left| \lambda^{2} - v_{2}^{2} \right|^{2} \left| -2 - v_{2} + y_{1} y_{2} \right|^{2}}{\left| \lambda_{1} u_{2} + V_{1} v_{2} - V_{1} + v_{2}^{2} \right|^{2}} \\ &= \left| (u_{1}^{2} + v_{1}^{2} v_{2}^{2} + y_{2}^{2}) + \left| v_{1} v_{2} + (v_{1} v_{2}^{2}) \right|^{2}} \\ &= \kappa_{1} \left| e^{2} - \lambda_{1} v_{2}^{2} + 2 \lambda_{2} v_{2} + \lambda_{2} v_{2}^{2} \right|^{2} \\ &= \left| (V_{2} v_{1} + \lambda_{2} v_{2}^{2}) \right|^{2} \end{aligned}$$
 Now, 
$$D = 0$$

$$A_{2} \subseteq A_{1} \neq A = \emptyset$$

$$= \frac{\gamma_1}{\gamma_2} = \frac{\gamma_1'}{\nu_1}$$

= vector  $x_1 \in \mathbb{R}_+$  and  $y_2 \in \mathbb{R}_+$  for illustry. Japan den.

 $\gamma$  in the conjugate open sets D of

So, mot/infoachthme≀- C∀0.

ic. to negetive or positive.

dowever. Inblide that here since

 $\partial : \langle \mathbf{v}_2 |_{\mathcal{F}} + \mathbf{v}_1 \rangle_{\mathcal{G}} \mathcal{F}$  is defined be near two

36, that make endance  $\Rightarrow D(x)g(x), y \Rightarrow f(x) = f(x) = f(x)$ 

89. (d)

$$\tilde{N} = 5\pi (a + 19 \tilde{N}) + 8\pi^2 k + c_{p} \epsilon + c_{p} \epsilon + c_{p} \epsilon$$

$$C_{ij} \left( \frac{\partial v_{ij}}{\partial x_{ij}} + \frac{\partial v_{ij}}{\partial x_{ij}} + \frac{\partial v_{ij}}{\partial x_{ij}} \right) = \partial_i v + v_i y + \partial_i y_i$$

$$\operatorname{atp}_{\mathcal{F}}(1)$$
 and  $\operatorname{atp}_{\mathcal{F}}(2)$  . We have  $\operatorname{atp}_{\mathcal{F}}(2)$ 

40. (a)

$$\frac{14}{56} = \frac{20}{28}$$

$$p_1 = 2\frac{1}{2} + y + y$$

$$\mathbf{w}_{-1, -1, \frac{1}{2}} = 0 \quad \forall -1$$

$$\mathbf{r} : \mathbf{r} = \mathbf{r} \cdot \mathbf{r}$$

$$\sim \int_0^\infty \gamma^{-1} \left( (2+r) \right)^{(2)} = 2^{r}$$

Above form in the  $\begin{pmatrix} 0 \\ 0 \end{pmatrix}$  by outling the wake a = 0.

Applying  $U^{\prime}$  -Keckwitter

$$\lim_{N\to 0} \frac{\frac{2}{2}(9+e^{\frac{1}{2}(n+1)})^{\frac{1}{2}-1}}{1} + \frac{2}{3}(9)^{\frac{2}{2}} = 2$$

42

$$\lim_{n\to\infty}\frac{v-\sin n}{1-\cos n}=\lim_{n\to\infty}\frac{1-\sin n}{1-\cos n}$$

$$=\frac{\lim_{n\to\infty}(-\sin n)}{\ln(1+\cos nn)}$$

$$\frac{1 + \inf_{x \to 1} \frac{31 \cdot x}{21 \cdot x}}{1 + \inf_{x \to 1} \frac{31 \cdot x}{21 \cdot x}} + \frac{1 - 0}{2 \cdot x} = 1$$

94 Contagg.

$$\begin{array}{ll} f(x) = \{x^2 + 1\} \\ f(x) = 2\{x^2 + 1\} \times 2x + 4x(x^2 + 1) = 0 \end{array}$$

с Ов Рисс –2 ни жинбулнуру

$$\begin{aligned} & f''(s) - f[r(2s) + (s - 4) \times 1] \\ & + r[2s^2 - s] - r[-1] \times 2] \\ & + r[2s^2 - s] - r[s - 4] \times 2] \\ & + r[2s - 48] \\ & f''(0) = -48 \times 6 - (s + 6s + 6s + 6s + s) \\ & f''(0) = r(s) \phi' - 48 + 6s + 6s + 6s \end{aligned}$$

$$(\infty \text{ or in the } x, x \in S) \\ (0.15) \sim (2) + 2)^2 + 16 + 35 + 6$$

 Lacro to only one maxima on to dy two marma. eer file lunction.

### 44. [d]

$$y = 3x^{4} - 19x^{4} - 25x^{4} - 9x^{4}$$

$$\frac{9x}{9x} = 12x^{3} - 49x - 448x + 9$$

$$x(12x^{3} + 46x + 16) = 0$$

$$x(2x^{3} + 26x + 16) = 0$$

$$e^2 - 4z - 4 \ge 0$$

$$x = \frac{4 + \sqrt{2(2 + 1)}}{2}$$
$$= \frac{2 + \sqrt{2(1 + 1)}}{2} = \frac{2 + 4\sqrt{2}}{2} = 1 = \sqrt{2}$$

$$\frac{e^2c}{\sqrt{2}} = 30a^2 - 90a - 48$$

Now all y = 0

$$\frac{\alpha^2 N}{m_0 2} = -48 \neq 0$$

$$\sin^2 \frac{x^2 x^2}{2\pi^2} = \sin^2 \frac{x^2 x^2}{2\pi^2} = 0.$$

 $_{\rm C}$  There are observed in this function.

### 65. (61)

es) in the neighbourness of sile.

$$f(x) = \sum_{n=1}^{\infty} dx (x - a)^n$$

where, 
$$\hat{D}_{ij} = \frac{n f(i)}{f(i)}$$
 
$$\hat{C}''(i) = e^{i \pi f(i)} (2) = e^{i \pi}$$

$$ADM(55 + 1.5)(1 + 2)' = h_1 = \frac{t^2(2)}{4!} = \frac{g^2}{4!}$$

$$20 \text{ if } x = 1 - \frac{15}{15} \cdot \frac{15}{15} \cdot \frac{15}{12} \cdot \frac{15}{12} \cdot \dots$$

$$200 \text{ if } x = 1 - \frac{15}{12} + \frac{15}{14} - \frac{15}{12} = \dots$$

$$1 \text{ from They on } x^2 = 1 - \frac{2}{12} \cdot \frac{\sqrt{5}}{3} - \frac{\sqrt{5}}{5} - \frac{1}{12}$$

$$\cos x^2 = 1 - \frac{2^4}{2^2} \cdot \frac{\sqrt{5}}{2^2} - \frac{\sqrt{5}}{12}$$

World must and docust in two drug even powers box.

Similarly, the 
$$e^{3}=e^{2}-\frac{\lambda^{2}}{17}+\frac{\lambda^{2}}{15}...$$
 
$$\cos a^{2}=\frac{a^{2}-\frac{\lambda^{2}}{2}}{12}+\frac{a^{12}}{2}...$$

So, only simply has all addice=ors clu ... corrod, project z (sit.)

$$P(\phi) = \phi r = \pi \ln \phi$$

We wish in expand spource  $\star$   $\sigma$ s is s . Update Addresses as s and s

$$\begin{split} f(x) &= f(x) + (x - x) f'(x) \\ &+ \frac{1}{2} \frac{1 - x}{2} \frac{f}{x} f''(x) - \frac{1 x - ax^2}{24} f''(x) \,. \end{split}$$

Номород, .: **– ж** 

$$\begin{split} f(x) &= f(x) - (x - xt) \cdot (xt) + \frac{\left(x - xt\right)^2}{2} f'(xt) + \\ f(x) &= f(x) + f(x) \left(x - xt\right)^2 + \frac{\left(x^2 - xt\right)^2}{2} f'(xt) + \frac{\left(x^2 - xt\right)^2}{2} f'($$

lest 
$$ax = c' + s \pi x$$
  
 $a'(c) = ac + c \cos x$   
 $a''(c) = a' + s i \pi x$   
 $a''(c) = c'' + a i \pi x + c'' + b'' + c'''$   
The coefficient  $a' = (c - \pi)^2 + 3$  therefore

$$\frac{\partial^2}{\partial x} = 0.5 \sin(\pi)$$

#### 4P. (c)

Treataign as constant, weight

$$\frac{\partial f}{\partial y} = Y y^{n-1}$$

Now we sea, this a cursion the elegati

$$\frac{d^2r}{\partial x^2} = \frac{\partial}{\partial x} \left( x^2 - x \right) = 2^{r-1} + x Y^{r-1} / 2 Y^r$$

of particular  $810 \pm 2$ 

see your substitute 
$$N(1+2mr)=1$$
.

40. (5)

$$O(\cos(a) \int_{\mathbb{R}^3} a^{\alpha} |r(t)| = \|\log \sqrt{2}$$

$$\mathbb{C}(\sigma \cup \sigma(L)) \prod_{i=1}^{l} \frac{\partial c_i}{|c_i| + 1} = \frac{\pi}{2}$$

Chalacter ( victorial)

Integrating by parts, taking N = n or a  $dv = w \cdot v^{n}$ we detail a = c a and  $a = -a^{-1}$ 

(v. 
$$\int a u \cdot cu = a(-c)$$
) of  $\int -c \cdot cu = -c$  of  $-cu$   
=  $-c$  (v. 1)

$$\mathsf{Now} \int\limits_{-\infty}^{\infty} d^{-1} d^{2} d^{-1} = \left( \left\| \Omega^{\mathsf{No}} \left( 1 + \left\| \frac{\partial \mathcal{N}}{\partial x} \right\| + 1 \right) \right\|$$

Obtains (a) 
$$\frac{1-\epsilon}{1-\epsilon} q_0 = \epsilon \cdot 0 + \epsilon \cdot 1 = \ldots + q = +\infty$$

Since this (d) is unbounded, (d) is the present

55. (9)

$$h = \frac{2}{2} x_{i,j}$$

$$|\frac{dv}{dx}| = \sqrt{6t}$$

engin of indicative algreen by

$$\begin{split} \int_{0}^{1} (1 - \left( \frac{dy^{N_{1}}}{dy^{N_{1}}} \right) dx &= \int_{0}^{1} \sqrt{2} + \sqrt{dx}, \\ &+ \left( \frac{2}{3} \right) + \sqrt{2^{2} \frac{2^{N_{1}}}{2^{N_{1}}}} = 1.22. \end{split}$$

Figure on of straight motivon point (2,0) to (1.2).

$$y - y = \frac{(y - t)}{(1 - t)!} (y - 0)$$

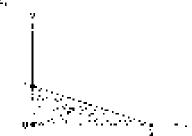
$$3(2, 0) = 4x^{2} + 100x^{4}$$
$$= 4x^{4} + 10(2x)^{4} + 4x^{5} + 106x^{4}$$

$$\iint_{S} (As^{2} + 180s^{2}) ds = \left[ \frac{25}{4} + \frac{180s^{2}}{5} \right]_{sym}$$

o2. (a)

$$\begin{aligned} & \int_{0}^{2\pi} \int_{0}^{2\pi} (3-x) \int_{0}^{2\pi} f(x) dy = \int_{0}^{2\pi} f(x) dy = \int_{0}^{2\pi} f(x) dy = \int_{0}^{2\pi} f(x) dy = \int_{0}^{2\pi} f(x) dx = \int_{0}^{2\pi} f(x) d$$

50 (2)



hologiciles stille straight the with  $z_{\pm}$  and easist 2 und vincersept = 1 is

$$\begin{pmatrix} x & y \\ 2 & 1 \end{pmatrix} = 1$$

$$\int_{0}^{(2-2y)} \int_{0}^{(2-2y)} (x) dx dy = \int_{0}^{2} \left[ \frac{dx^{2}}{2} \right]_{0}^{2-2y} dy$$

$$= \frac{\frac{1}{3} y}{3} (2-2y)^{2} dy$$

$$= \int_{0}^{2} (y)^{2} dy = \frac{1}{6}$$
Altaino valy, wain as 22a valiation at a pratia-

$$\frac{1}{2} \int\limits_{0}^{\frac{2-\alpha}{2}} (ev \cdot p) (dz \cdot abid \cdot b \cdot a \cdot a) = \frac{1}{n}$$

54. (c)

Strin, Paul Qaie autores valoris

55. (d) 
$$\begin{aligned} d \varphi [(x-z)] &= (y-z) \int_{\mathbb{R}^n} (x-y+z) \hat{\phi} \\ &= \frac{\hat{\phi}}{2\pi} [(x-y) + \frac{\hat{\phi}}{2\pi} (y-z) + \frac{\hat{\phi}}{\hat{\phi} z} (z-y-z) + \hat{\delta} \end{aligned}$$

56 th:

Then 
$$i = \frac{\partial^2}{\partial y^2} \left( + \frac{\partial f}{\partial y^2} \right) + \frac{\partial^2}{\partial z^2} \hat{h} = 2\psi + 4\chi (-h)$$

9) 99 of P(1, 1, 2), given  $f = P(-1) - \kappa$ . New of a victor dation yairs (in 1971, it. 4) in direction of whater s = 3c + 4t is given by

$$\frac{8}{8} |\cos \theta|^{2} = \left(\frac{3l - 4r}{\sqrt{25}}\right) (3r + ry - 8)$$
$$= \frac{1}{8} (8r + 7 + 4r + 4r + 6) = -2$$

57

Index, noting Herr walken that that is our livery is exact. So, the value of the integral is: Lei Litteb, egelgri

$$= 2 \int_{0}^{\infty} (\mathbf{y} \cdot \mathbf{v} \cdot \mathbf{x} - \mathbf{y} \cdot \mathbf{v} \cdot \mathbf{y})$$

$$= 2 \int_{0}^{\infty} \mathbf{y} \cdot \mathbf{v} \cdot \mathbf{y} \cdot \mathbf{v} \cdot \mathbf{y}$$

$$= 2 \int_{0}^{\infty} \mathbf{y} \cdot \mathbf{y} \cdot \mathbf{y} \cdot \mathbf{y} \cdot \mathbf{y}$$

$$= 0$$

$$= 2 \int_{0}^{\infty} \mathbf{y} \cdot \mathbf{y}$$

$$= 0$$

$$= 2 \int_{0}^{\infty} \mathbf{y} \cdot $

59. (a)

Let the point be (x, y, z) on surface  $z^2 = -1 xy$ . Establication only  $\mathbf{k} \in \mathcal{L}$ 

This dictance is enortest when the minimum we need to find in time of  $\mathbf{r}' \in \mathbf{r} \neq \mathbf{1} + \mathbf{r} \gamma$ .

$$y = -x^{2} + y^{2} + 1 + xy$$

$$\frac{\partial y}{\partial x} = 2x + y$$

$$\frac{\partial y}{\partial y} = 2y + x$$

$$\frac{t_0 f}{\delta x} = 0 \qquad \text{and} \qquad \frac{\delta_0 f}{\tau p^2} = 0$$

— Pv − y ± 0 − si c 2c − si n 0 Bumi gián ita sexta y exiger

o the early solution and surfaced in the large البه مراوية الطلاط

$$f_{0}(xy) = \frac{4f_{0}^{2}f_{0}}{\partial x^{2}} + 2f_{0}$$

$$S = \frac{3f_{0}^{2}f_{0}}{\partial x^{2}f_{0}} = 1$$

$$1 = \frac{2f_{0}^{2}f_{0}}{2f_{0}^{2}} = 2f_{0}$$

 $0.12\times2.04\times3^{2}-1$ Si ce

We have bost in ou alloan a max mum or michinum exists pero (0.10)

Now since  $z = 2 \times 3$ , so the annunal e(0,0)Nowah ale 0 yello

$$z = (1 - z_F - 1) \cdot c_F$$

Bothe both water, all emigrous various  $z^2 = 1 + \epsilon / 2/0 \text{ GeV}$ 

The database  $i = j_0 c_1 + j_2 c_3$  i = 1 $S_{0} \sim a_{0} + a_{0$ 

An  $d^{\dagger}$  degree polynomial below exactly n-1nmas pod prejeleko can neve o masi n. u. U. n i I dicromas. Also anin'i deuree poynini ie has at most introds to the circuit,  $\mathbf{a}_{k} \in \mathbb{C}$  and  $\mathbf{c}_{k}$ pot-nomial (degree U) sample (500 km i 500 i  $z \mapsto \mathcal{E}$  ( Fig. 5.4) in even formula  $\operatorname{bns}_{z}$ crossings.

60. (6)  
Let 
$$y = y = z$$
  
 $z = x = z$   

$$-\frac{1}{2}x - \frac{z^2}{2!} - \frac{z^2}{2!} - \cdots$$

$$-(0)z = -\frac{1}{2}z - \frac{z^2}{2!} - \frac{z^2}{2!} - \cdots$$

$$-(0)z = -1 - \frac{z^2}{2!} - \frac{z^2}{2!} - \cdots$$

$$-(1 + \frac{z^2}{2!} - \frac{z^2}{2!} - \frac{(x - \pi)^2}{2!} + \cdots)$$

From 
$$\frac{m}{m} n = 0$$
 or  $\frac{m^2}{m} n / n = m / n$  or 
$$1 = \frac{m^2}{n} = \frac{\log n}{m} dn$$

$$\int_0^{2\pi} \frac{\log \left(\frac{\pi}{4} - n\right) n dn}{n + m + m} dn$$

$$\int_0^{2\pi} \frac{\log \left(\frac{\pi}{4} - n\right) n dn}{n + m + m + m} dn$$

Given a 
$$0.1 \cdot 90 = \frac{\sin \theta - \tan \theta}{1 \cdot \tan \theta + \sin \theta}$$

$$f = \int_{2}^{2\pi i} \frac{|\sin \frac{\pi}{a}| |\sin x|}{|\sin \frac{\pi}{a}| |\sin x|}$$

$$f = \int_{2}^{2\pi i} \frac{|\sin \frac{\pi}{a}| |\sin x|}{|\sin \frac{\pi}{a}| |\sin x|}$$

$$= \int_{2}^{2\pi i} \frac{|\sin \frac{\pi}{a}| |\sin x|}{|\sin \frac{\pi}{a}| |\sin x|}$$

$$= \frac{1 - \begin{bmatrix} 1 & \sin x \\ -1 & 1 & \tan x \end{bmatrix}}{1 + \frac{1 - \tan x}{1 - \tan x}}$$

$$= \int_{0}^{\infty} \frac{\int_{0}^{\infty} f(x) dx(x) + \int_{0}^{\infty} f(x) dx(x)}{\int_{0}^{\infty} f(x) dx(x) + \int_{0}^{\infty} f(x) dx(x)} dx$$

= 
$$\int_0^{\pi/2} \frac{2\pi d^{-1}}{2} dx = \int_0^{\pi/2} \ln x \, dx$$

$$= [\log(\cos s)]^{\frac{n-1}{2}}$$

$$\leq \ln \left| s \approx \frac{\pi}{2} \right| + \epsilon \, (sept)$$

$$= \ln\left(\sqrt{2}\right) - \operatorname{gr}(1) = \ln\left(2^{|\Gamma|}\right) - 0$$

$$-\frac{1}{2}\ln 2$$

Arring sight 42% U varied from  $0.15 \pm 9.7 \pm 0.15 \pm 9.7$ 



$$\frac{1}{\cos \delta t}(t-s)^2(t)d\theta t = \frac{d\theta}{1}(t\cos\theta + \sin\theta)^2(t)d\theta.$$

$$\begin{split} &= \int_{0}^{\infty} (1 - \sin 2\theta) d\theta \\ &= e^{-\frac{(1 - \cos 2\theta)}{2} - \frac{\pi}{6}} \\ &= \frac{\pi}{2} - \frac{1}{2} [\cos 2\frac{\pi}{2} - \cos 4\theta] \\ &= \frac{\pi}{2} - \frac{1}{2} [-1 - 2] - \frac{\pi}{2} - 1 \end{split}$$

Curve 1 
$$y' = x_0$$
  
Curve 2  $y' = x_0$ 

Curve 2 
$$-5.1 = 4.5$$

line section controlling 4.1 A el 2

$$y^2 = 4x - 4\sqrt{7y} + 2\sqrt{y}$$
  
 $y^2 = 8 \times 8 y \Rightarrow y(y^2 - 64) = 0$ 

**Collition** 
$$y = 4 \text{ and } y = 3.$$

The afterine sections of a lead of the all follows: hola da encloses convect cuevas il or a 5 a e given by



$$A \approx -\frac{2}{9}y_1 dx = \int_0^2 y_2 dx$$
$$= -\frac{4}{9}x^2 dx$$

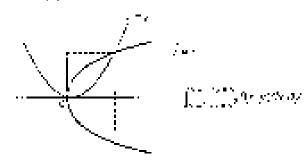
$$= \left. 2 \frac{a^{2/2}}{1/2} \right|_0 + \frac{a^2}{2 \times 2} \right|_0^2$$

$$+\frac{4}{3}(4)^{3+\frac{3}{3}} = \frac{14f^2}{3\times4} = -\frac{16}{3}$$

Allowably, the same chases obtain the left same being a reader  $0.000 \pm 0.000$ 

Required Area = 
$$\iint_{0}^{\sqrt{2}} \frac{dx}{dx} dx dy$$
$$= \iint_{0}^{\sqrt{2}} \frac{dx}{dx} - \frac{dx}{dx} dx = \frac{-\tau_{0}}{5}$$

 $\omega L$ . (a)



88 - (b) 
$$\begin{aligned} r &= (5 + 3)^2 + \frac{1}{2}^2 \\ 83 &= (1 - 1)^2 + (\frac{3^2}{33} + \frac{3^2}{10} + 6\frac{10^2}{23} \\ - (2\pi) &= (39 + .0347) \end{aligned}$$

The gradient at P(1,2) in the  $= 3(2 \times 10 + 3.3 \times 2) + 4(1 \times -1)$ =  $2(1 \times 12) + 43$ 

to. :b;

$$\Delta_{0} = -\frac{12}{5\pi} \cdot \frac{5^{2}}{39} \cdot \frac{5^{2}}{87}$$
Here
$$A = x^{2} \cdot 3(x^{2} + 2x^{2})$$

$$A = x^{2} \cdot 3(x^{2} + 2x^{2})$$

$$A = x^{2} \cdot 3(x^{2} + 2x^{2}) + 0.475$$

$$A = x^{2} \cdot 3(x^{2} + 2x^{2}) + 0.677$$

$$A = x^{2} \cdot 3(x^{2} + 2x^{2}) + 0.677$$

The enectional convertibility (Section of Section 5).

$$\frac{e}{|\mathcal{D}|} \operatorname{grad} I = \frac{I_{-1} + 2e}{\sqrt{2 + 1} \cdot e^2 + 2^2} \cdot (2t - 12t - 4et)$$
$$= \frac{1}{\sqrt{6}} (12t - (-t) - 2t + 2t/4)$$
$$= \frac{e}{\sqrt{2}} = -3\sqrt{2}$$

GY. (b) Vector field,  $1 = 2x\pi i + 2x_0 i + x\pi^2 k$ 

$$= -(1 + \epsilon_{3}) + \epsilon_{1} h$$

Divisigion de la veoletres di

$$\begin{aligned} \log \left( C + 2x + C + \frac{3v_1 + 3v_2}{(w + dy)} + \frac{dv_2}{dz} \right) \\ &= \frac{3}{3w} \left[ S(-1) + \frac{d}{3y} (2xy) + \frac{3}{dz^2} (2yz^2) \right] \\ &= 3t + 2x + 2zy \\ E(x, y)_{x = 1}^{2} = 2x + 2xy $

**a**9. (a)

$$\frac{|\sin z|}{|\sin z|} \frac{|\sin z|}{|z|} = \frac{|\sin z|}{|z|} \frac{|\sin z|}{|z|} \frac{|z|}{|z|} = \frac{|\sin z|}{|z|} \frac{|z|}{|z|} = \frac{|z|}{|z|} = \frac{|z|}{|z|}$$

86 (14)

$$\lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^n = \lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^{\frac{n}{n}}$$
$$= \lim_{n \to \infty} \left(1 + \frac{3}{n}\right)^{\frac{n}{n}}$$
$$= n$$

70. (c) y = 9 + 3x = 9 + 6x + 2 + 6x + 2

$$=3x\cdot 3\cdot x + \frac{\pi}{2}.$$
 For each  $x = \frac{\pi}{2}$ 

Since z = 0 years 3z = 0 are adjacently. These graphs of a map and earlier the charges  $a \times a$ 

$$z \sim \frac{2}{7}$$

that that of 
$$s=\frac{3}{5}$$
 is  $2-3\times\frac{5}{3}=0$ 

$$H_{MM}(j, k) (y_1 : 1 - \frac{2}{3}) \approx 2 \times \frac{3}{3} = 2 = 0.$$

$$\eta \left(\frac{g_0}{h_0} + g_0\right) J \approx \frac{g}{a} = f$$

Since Sellin. BigHilms = 
$$1\left(\frac{2}{2}\right)$$

) (project substituting a section of the section o

y sifterolara con inclusiva e egy. G

With  $8 \pm 3 \pm 2 \pi$  and  $C_{\rm A} \pm 2 \, {
m are} \, (55 \, {
m years}) a_{\rm B}$ ey are Diferent polo:

on a content type 
$$-\frac{2}{5}$$

Now struct 
$$\frac{2}{3}$$
, Lune Lett der vortwork  $-2.3$   
Hilb Hight Helive,  $n_{2}=13$   
Lune Hil

... The form that you condition on a fit and  $v=\frac{2}{n}$ Not, we have the yill all yills temperature of the  $R_i$ except at  $z = \frac{2}{a}$ 

$$\begin{aligned} f(x,y) &= 4x^2 + 6x + 6x + 4y + 9 \\ \frac{dx}{dx} &= 9x + 8 \\ \frac{dt}{dx} &= 49y + 4 \end{aligned}$$

Positing 
$$\frac{d\mathbf{r}}{dt} = 0$$
 and  $\frac{df}{dy} = 0$   
 $\delta \mathbf{z} + \delta = 0$  and  $(\mathbf{z}\mathbf{v}) \cdot \mathbf{d} = 0$ 

Given 
$$y = 0$$
 and  $y = \frac{1}{6}$ 

$$\left(1, \frac{1}{6}\right)$$
 is the only stationary cont.

$$\begin{aligned} \mathbf{r} &= \left[\frac{\partial \mathcal{T}}{\partial x^2}\right] + 3 \\ 3 &= \left[\frac{\partial \mathcal{T}}{\partial x^2}\right] + \frac{3}{3} \\ 3 &= \left[\frac{\partial \mathcal{T}}{\partial x^2}\right] + 3 \\ 4 &= \left[\frac{\partial \mathcal{T}}{\partial x^2}\right] + 3 \\ 4 &= \left[\frac{\partial \mathcal{T}}{\partial x^2}\right] + 3 \end{aligned}$$

3) by 
$$n = 2 \cdot 12 - 55$$

we have although a maxima or minimum of  $\left( \frac{1}{3} , \frac{1}{3} \right)$ 

also since, 
$$a := \frac{1 + e^{ab}}{2e^{2} \left(\frac{1}{2} \cdot \frac{1}{2}\right)} = 2 > 0$$
 the point

$$\left( \sqrt{\frac{\pi}{3}} \right) \approx - (8000) \text{ of minute.}$$

$$\begin{split} \int_{0}^{\left(1-\frac{1}{2}\right)} &= 4 \times 10 + 3 \times \frac{1}{8^2} + 3 \times 1 + 4 \times \frac{1}{9} = 8 \\ &= \frac{19}{9} \\ &\approx 0 \text{ the with a satisfied } 0 \text{ system multiply at } \end{split}$$

$$20 \frac{10}{2}$$

$$f(t) = \frac{2\pi t}{t}$$

$$f(t) = \frac{t^2 + \frac{t^2}{2} + \frac{t^2}{2} + \cdots}{t}$$

$$f(t) = 2 - \frac{t^2}{3!} + \frac{t^2}{2!} + \cdots$$

$$f(t) = -\frac{2t}{3!} - \frac{4t^2}{5!} + \cdots$$

$$f(t) = -\frac{2t}{4!} - \frac{4t^2}{5!} + \cdots$$

$$A(t) = 0$$
,  $f'(t) = 0$ ,  $f''(t) < 0$ .

$$(x, z)(\hat{p})$$
 at a calling  $\hat{q}$  (eq.

## 73. (0)

$$\mathbf{g}^{\mathbf{r}} = \mathbf{y}^{\mathbf{r}_{\mathbf{r}_{\mathbf{r}}}}$$

aking log on both sides.

$$v = \frac{1}{\lambda} \log x$$

$$\frac{\partial x}{\partial x} = \frac{1}{x} - \frac{1}{x} = 2.5 \text{ as } \left( -\frac{1}{x^2} \right)$$

$$= \frac{1}{x^2} \left( 1 - \log x \right)$$

$$\frac{\partial x}{\partial x} = 0$$

$$\Rightarrow \qquad \log x = 0$$

$$\Rightarrow \qquad \log x = 1$$

$$\Rightarrow \qquad x = e \times e \text{ sec ionary point.}$$

$$\frac{d^2y}{dx^2} = \frac{1}{x^2} + \left(\frac{1}{x}\right) + \left(1 - \log x\right) \times \left[-\frac{2}{x^2}\right]$$
$$1 + \frac{1}{x^2}\left[(1 - x)(1 - \log x)\right] = \frac{1}{x^2}\left[(2 - 2\log x) + \frac{1}{a^2}\right] \times 0$$
$$\left[\frac{d^2y}{dx^2}\right]_{x=a} = \frac{1}{a^2}\left[(2 - 2\log x) + \frac{1}{a^2}\right] \times 0$$

So, all x = c, we have a maximum:

74 içt

$$\begin{aligned} \int_{\Omega} \frac{dx}{1 + x^2} &= \left[ \tan \left( \frac{1}{x} \right) \right]_{\Omega}^{\Omega} \\ &= \tan \left( \frac{1}{x^2} \right) + \tan \left( \frac{1}{x^2} \right) \\ &= \frac{\pi}{2} \cdot \left[ \frac{-\pi}{2} \right] + \pi \end{aligned}$$

70. **(5**).

Integrating by ports:

$$\begin{aligned} \Delta z &= z_1 \\ \Delta z &= z_2 \\ \Delta z &= z_3 \\ \Delta z &= 0 \\ z_1 \\ z_2 &= \int 0 & dz = z_2 \\ \Delta z_2 &= \int 0 & dz \\ &= \int z_1 & dz \\ &= \int z_2 & dz = \int z_2 & -\int z_3 \\ &= \int z_1 & dz \\ &= \int z_2 & dz = \int z_3 & -\int z_3 & -\int z_3 \\ &= \int z_1 & dz &= \int z_3 & -\int z_3 & -\int z_3 \\ &= \int z_1 & dz &= \int z_3 & -\int z_3 & -\int z_3 \\ &= \int z_1 & -\int z_2 & -\int z_3 & -\int z_3 & -\int z_3 \\ &= \int z_1 & -\int z_3 & -\int z_3 & -\int z_3 & -\int z_3 \\ &= \int z_3 & -\int z_3 \\ &= \int z_3 & -\int z_3 \\ &= \int z_3 & -\int $

TC. : 1 Let  $\mathbf{q}_{i}$  tellective  $\mathbf{y}=\mathbf{f}(\mathbf{x})$  be m and  $\mathbf{z}=\mathbf{e}$  and  $\mathbf{x}=\mathbf{h}$ a biven by:



$$\left\{ \sqrt{1+\left(\frac{2\pi^{2}}{2\pi}\right)^{2}}dx\right\}$$

nate. 
$$y = 46 \frac{y^2}{12}$$

$$\frac{\partial y}{\partial x} = x \hat{x} \frac{x}{\partial x}$$
$$y = 0 \text{ of } x = 0$$

since 
$$y = 0$$
 of  $y = 0$ 

$$\text{and} \qquad \quad y = x_1 \otimes x_2 = \frac{1}{x_1}$$

 $\sqrt{s}$  can be seen from equation ( ),  $9 \times 3008 100100$ x = 0 and  $x = \frac{1}{2}(2)$ .

$$\lim_{n\to\infty} (1 \text{ angin of softia}) = \frac{\sqrt{n+1} \log n^{2n}}{2 \sqrt{n+1} \log n} dn$$

$$=\frac{\log \left( \frac{1}{2} \frac{\log n^{-2\delta}}{n^{\delta}} \right) \cos \frac{1}{2} \cos \frac{1$$

Longin shoto  $s = 2 \int_{-\infty}^{2\pi} \frac{1}{100} e^{\frac{\pi^2}{3} \frac{1}{2}} dx$ 

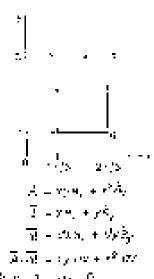
## 77. (c)

(responded) இது சியுக்கும் பிரும் (1990) , as re-edis, it I have earlier and of thy outpoly - may  $m \in \mathbb{R}^{d}$  along the projectors  $u \mapsto u^{-1} v = u^{-1} v$ 

$$\mathcal{G}_{0}(\mathbf{u},\mathbf{a})=\int_{0}^{\mathbf{u}}\mathbf{u}_{0}^{2}d\mathbf{x}$$

Here s=1 is a small  $p=\frac{1}{2\pi}=N$  is a

$$\begin{aligned} \gamma &= \text{Volume} &= \frac{1}{4}\pi \cdot 2 \cdot 4 \hat{A} \\ &= \pi \cdot \left[ \frac{2^2}{2} \int_{1}^{1} -\frac{1}{2} \left[ \hat{A}^2 \right] \hat{A} \right] \\ &= \frac{\pi}{2} \left[ \frac{2^2}{2} - \frac{2^2}{2} \right] \cdot \left[ \frac{3}{2} \pi \right] \end{aligned}$$



$$P+G(|y=1|-\partial y=0)$$

$$\frac{\partial}{\partial z} d \cdot dz = \int_{-2\pi}^{2\pi} r \, dz = \frac{z^{2} d^{2}}{2} \log z = \frac{z}{2}$$

$$\begin{split} Q &= \partial^2 x - \frac{2}{\sqrt{8}} - p(x + 1) \\ &= \frac{2}{3} A \left( d^2 + \frac{3}{24} \frac{2}{\sqrt{2}} \frac{d}{d} p_x + \frac{4}{8} \right) A - 1 z + \frac{9}{8} \end{split}$$

$$\mathbf{H} = \mathbf{S}, \ \ \mathbf{y} = \mathbf{S} \ , \ \ \mathcal{O}\mathbf{y} = 0$$

$$\int_{C}^{S} \overline{Z} \cdot \overline{Z} = \frac{2\sqrt{2}}{Q_0} \operatorname{fordiv}$$

$$= \frac{2}{2} e^{i\frac{Q_0Q_0}{Q_0Q_0}} - \iint_{C} \frac{1}{Q_0} \cdot \frac{Z_0}{Q_0} = \frac{2}{Q_0}$$

$$G=P(\chi_{\mathbf{w}}(\mathbf{v}_{k,k}^{(1)},\mathcal{O}_{\mathbf{x}_{k}}))$$

$$\int_{\mathbb{R}}^{\mathbb{R}} \beta_{+}(q) = \int_{\mathbb{R}^{2}} \frac{1}{\sqrt{2}} e^{2} dy = \frac{1}{8} (1 - 3) = \frac{-3}{8}.$$

$$\oint_{C} A^{2} dt = \oint_{C} A^{2} dt = \int_{C} A^{2} dt = \int_{C$$

### 78. /cl

We let be weather  $-\frac{1}{2} = 2 \frac{1}{4} \frac{\pi}{2} - \frac{1}{2} \frac{2\pi}{2} \frac{\pi}{2}$ 

fiction is to see that up an interpretary power.

$$\begin{split} &= \sin(i\overline{V}) \\ &= \nabla \times \widehat{V} = -\frac{\partial}{\partial r} - \frac{\partial}{\partial y} - \frac{\partial}{\partial z} \\ &= 2i z + n^2 z = 0 \end{split}$$

$$\begin{split} & = \left[ \frac{\alpha}{4\pi} (2) (1 + \frac{\alpha}{4\pi} (-3^2 \pi)) \right]_0^2 \\ & = -\frac{\alpha}{4\pi} (10) (1 + \frac{\alpha}{4\pi} (2\pi)) \left[ \frac{\beta}{\beta} \right] \\ & = \left[ \frac{\alpha}{2\pi} (-2^2 \pi) + \frac{\beta}{4\pi^2} (2\pi) \right]_0^2 \\ & = -2\pi^2 (1 + \frac{1}{2} + 2\alpha \pi + 2\alpha) \left[ \frac{\beta}{\beta} \right] \end{split}$$

 $A(11, 1, 1) + y \approx 0.60 \text{ a.u.} \quad y = 1 \text{ and } x = 1$ = 2.977 vá trú y v $= 4.1 \pm \frac{1}{2}$  .  $\pm \frac{2}{3}$ 

S0. (a) 
$$\hat{y} = -\hat{y} + y_0^2 + z_0^2$$
 or  $y = -\nabla \cdot z$ 

$$= \left[ \frac{\partial}{\partial x} + i \frac{\partial}{\partial y} - i \frac{\partial}{\partial z} \right], \quad (\partial + i \hat{y} + 2\hat{y})$$
$$= \frac{\partial x}{\partial y} + \frac{\partial y}{\partial y} - \frac{\partial z}{\partial z}$$
$$= \frac{\partial}{\partial z} + \frac{\partial}{\partial z} + \frac{\partial}{\partial z} = 0$$

52. (c) 
$$0.7(\mathbf{r}) \approx p \mathbf{s} \text{ to } (c) \mathbf{s} \text{ s} \mathbf{f} \mathbf{x} = \frac{\pi}{2}$$

$$= \frac{\lambda c c \mathbf{s} \mathbf{r}}{2 + \frac{\pi}{2} - 1} = \frac{\sqrt{\pi}}{2} \left[ \mathbf{s} \right] \mathbf{x} \quad ...(1)$$

Since the limit is in form at  $\frac{d}{dt}$ , we can use  $\mathcal{M}$  containing on  $\mathbb{Z}$  15 of equation ( ) and get

$$\frac{\eta_{i,1} + \lambda s \, \Gamma w}{-1} = 1$$

$$\Rightarrow -\lambda s \, r \frac{\lambda}{2} = 1$$

$$\Rightarrow -\lambda s \, r \frac{\lambda}{2} = 1$$

$$\begin{aligned} & \text{fix} = 9z + 3 + 3 \\ & \text{fix} = 5 + 2z = 0 \\ & = -x + - x \text{ the switches point} \\ & - 2(y) = -2 \\ & = -2(x) + -2 < 0 \end{aligned}$$
 So also — we have a solution maxima.

$$3h(3+6)\frac{6^2}{5}\cdot\frac{6^3}{6}$$

$$\int_{0}^{\infty} \frac{\zeta(3x + (31))}{\zeta(3x + (31))} dx = \int_{0}^{\sqrt{2}} \frac{z^{3}}{z^{3}} dx = \int_{0}^{\sqrt{2}} e^{\frac{z}{2}} dx$$

$$= \left[ \frac{z^{3}}{2!} \int_{0}^{z^{3/2}} \frac{z^{3/2}}{2i} dx + z^{3/2} \right]$$

$$= \left[ \frac{z^{3/2}}{2!} \int_{0}^{z^{3/2}} \frac{z^{3/2}}{2i} dx + z^{3/2} \right]$$

$$= \left[ \frac{z^{3/2}}{2!} \int_{0}^{z^{3/2}} \frac{1}{2i} dx + z^{3/2} \right]$$

$$= \frac{z^{3/2}}{2!} \left[ \frac{1}{2!} \int_{0}^{z^{3/2}} \frac{1}{2i} dx + z^{3/2} \right]$$

$$= \frac{2}{2!} \left[ -\frac{1}{2!} \int_{0}^{z^{3/2}} \frac{1}{2i} dx + z^{3/2} \right]$$

86 (b)

$$z = \int_{0}^{z} \frac{\sqrt{z}}{\sqrt{z+1}} \frac{dz}{\sqrt{z+r}} dz \qquad (1)$$

Since 
$$\int_{0}^{\pi} F(x) dx = \int_{0}^{\infty} f(x-x) dx$$

$$I = \int \frac{d^2 dx}{\sqrt{2(-x^2+\sqrt{y})}} \, dx \qquad (12)$$

$$(1-J) = 2J = \int_{\sqrt{2}}^{\sqrt{2}} \frac{\sqrt{2} \sin \alpha}{\sqrt{1-\alpha}} d\alpha$$

$$\Rightarrow \qquad SI = \int_{-\infty}^{\infty} 2h.$$

$$\Rightarrow \qquad SI = 0$$

97 (d)

a Sailt soon Lindlan than

$$\int_A^{\infty} f(x) dx = \frac{2}{5} f(x) dx$$

B9. (b)

.=. Given ii, III and II a, a⁵i

$$P = P = -\frac{1}{2} - \frac{\sqrt{3}}{2}$$

$$P = P^2 = -\frac{1}{2} - \frac{\sqrt{3}}{2}$$

Some vertice or

$$S = \{1, ..., 1\}$$
  
 $S = \{1, ..., \infty\}$   
 $S = \{1, ...$ 

Solution and embegger of

90. (b)

$$\lim_{x \to 0} \left[ \frac{1 - \cos x}{x^2} \right] = \frac{1 - \cos x}{1} \cdot \frac{0}{0}$$

Coluse a stospila sirut.

$$\lim_{n\to\infty} \frac{(1-\cos n)}{n^2} = \lim_{n\to\infty} \frac{n \cdot n}{2n} = \frac{n}{n^2}$$

Guiuse L∗iacpila sir f∴ cγcin

$$= \lim_{n\to\infty} \frac{\partial \Re n}{2} \to \frac{\pi}{2}$$

s. 
$$x = 0$$
 all time  $y$   
 $\lim_{n \to 0} (1 + i) = -0 = 0$   
 $\lim_{n \to 0} (1 + i) = 0$ 

Since let inthe Rightlinth = f(0)

flow: Defined we walk 
$$y = 0 = -0$$
  
 $-10 = 8 \text{ gather} \text{ within (all  $y = 0)} = +0$   
 $-10 = 8 \text{ gather} \text{ within (all  $y = 0)} = +0$$$ 

(a) – is not structurally a consequent

En la livigarith divisions de la Hilliam Legisia 🕒 🙃

92 (d)

$$f(t) = x^*(t)^*$$

$$\hat{c}(x) = \hat{c}(x) = 0$$

$$\Rightarrow \qquad 3x^{\frac{1}{2}} = 3$$

 $\Rightarrow$  x = 0 is the only education in

at , as mi, galpain. mad = C.:

New 
$$f''(u) = u$$
 are:

so 
$$f^*(0) = 6$$
 which accords a

Since the history services easily be depositional to a not decively a which is an ordinary of the construction.

98 (e)

We leed absolute has notiful.

 $f(z) = z^2 - 3z^2 - 54z + 5$  in the interval [z, 0]. His little destination and some exacting  $z(\Delta + 0)$ 

$$i \mapsto f(x) = 2x^2 + 1(x + 2x) = 0$$

$$||f(b)|| = 1a + 1a = -b < 0$$

-ido x = 2 io o contor cos recoment

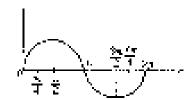
$$ans = 2046 - 24 \cdot 18 - 46 \cdot 50$$

nSix inike cahtalida Amilian,

nkw wike at the values of tatendiput to be takended as one maximum commits find accoluge maximum in qualitimates, selectors

Clearly the observed function is  $m_A = 0$ , and possible intramium value is 41.

84 (h)



-torsing signar displayed above, we less easily see that if the large (eq.  $7\pi M_{\odot}$  ) have story one loop matrix of  $0\pi/2$ 

25 (b)

$$\phi' = 4 - x - \frac{x^2}{2} - \frac{x^2}{2} \cdots$$
(By Melloudhs per coloapons of)

95. (a)

The alea en closed is a non-delow as enabled: The memion Halof contribution City notes above covers



$$y = y$$

$$y = y^{2} \text{ sind brigges} y$$

$$1 \Rightarrow y = y^{2}$$

$$\Rightarrow xyx = 1 = 0$$

$$\Rightarrow y = 0 \quad y = 0$$

Now, x = 0, y = 0, which is all (0.005), as x = 1 + y = 0' = 1, which is  $p_{x}/(0.00)$ . So modified there is

$$= \int_{0}^{1} dd_1 + \int_{0}^{1} dd_2$$

B7. (조)



The sness through Halyman CP0/8155 (um so twittebroe. Is the megalitied of the vector arcollection

$$\begin{aligned} & - G^2 \times \mathcal{O}^{\frac{1}{2}} \\ & - \partial \mathcal{O} = \mathcal{O} + \mathcal{O} \\ & - \partial \mathcal{O} = \mathcal{O} + \mathcal{O} \\ & - \partial \mathcal{O} \times \partial \mathcal{O} = \begin{vmatrix} 1 & 1 & 0 \\ 2 & 0 & 0 \end{vmatrix} + 2 + 0 \end{vmatrix} + (32 - 12) \mathcal{O} \\ & - \partial \mathcal{O} \times \partial \mathcal{O} \end{vmatrix} = \sqrt{\mathcal{O} + \mathcal{O}^{\frac{1}{2}} + 2\mathcal{O}^{\frac{1}{2}} $

98 (6)  

$$e^{2} = e^{2} + e^{2} = 1$$
  
 $f(x, y, z) = e^{2} + e^{2} + e^{2} + e^{2} = 0$   
 $expression = \frac{e^{2}}{dx} \frac{1}{4} + \frac{e^{2}}{dy^{2}} \frac{1}{4} + \frac{e^{2}}{dx^{2}} \frac{1}{4} + \frac{e^$ 

$$\frac{1}{\sqrt{2}}(4\frac{1}{\sqrt{2}}) = \frac{2}{\sqrt{2}}(4\frac{2}{\sqrt{2}}) = 280(2\pi)$$

$$\frac{2}{\sqrt{2}}(4\frac{32}{\sqrt{2}}) = 0.6$$

$$-\text{proof} = \sqrt{2} \cdot 2 + \sqrt{4} + 2$$

There is a row to real vector of arising P a

$$\begin{aligned} \eta &= \frac{1}{p(+1)} (q \cos k)_{\rm tot} \\ &= \frac{1}{2} \left( \sqrt{2} \left( -\sqrt{2} \right) \right) = \frac{2}{\sqrt{2}} \left( -\frac{1}{\sqrt{2}} \right) \end{aligned}$$

99. (a)  

$$|A| = 3x^{2}$$

$$A = 3x^{2} \frac{f}{f}$$

$$V \cdot A = 3x \cdot (e^{xx^{2} - 4}T) = 0$$

$$(3x^{2} + 6x^{2} \cdot 7 \cdot (xA) = (\nabla \cdot A + 2\nabla \cdot A)$$

$$V \Big[\nabla (e^{xx^{2}}) + e^{-x^{2} - 4}(\nabla \cdot A) \Big] = 0$$

$$(3x^{2} + 6x^{2} \cdot 7 + 2x^{2} + 2x^{2} + 3$$

$$(3x^{2} + 6x^{2} \cdot 7 + 2x^{2} + 3x^{2} + 3x$$

$$\begin{bmatrix} 0 & f \in S \\ f \cdot f & f \in S \end{bmatrix}$$
$$\begin{bmatrix} -3 & f \in A \\ d & f \in A \end{bmatrix}$$

$$\begin{aligned} & \lim_{x \to 0} R(t) = \lim_{x \to 0} \frac{x - \infty}{t^2} = 2 \\ & \lim_{x \to 0} f(x) = \lim_{x \to 0} |x - 1| = 2 \\ R(x), & R(t) = 2 \\ & \lim_{x \to 0} f(x) = \lim_{x \to 0} f(x) = f(0) \end{aligned}$$

(volt sportinuous et al., 3) opachia) sice root.

# 101 (E)

$$\frac{dy}{dz} = 16x + 16$$

$$\frac{dy}{dz}\Big|_{z=1} = 22$$

$$\frac{dz}{dz}\Big|_{z=2} = \frac{2}{2}$$

m via defined open into yet x = (1, 5)

$$v = (-1 \le k \le 2)$$

, 
$$20 < \frac{n_F}{2\lambda} < 0.0$$

### 102. Id?

Háng %-Herienga

Where 
$$A = \frac{2\pi^2 2\pi^{-3} 4}{3\pi^2}$$

So trait the others where it is been that there is allows: one sign others of inthe sign extures Solution stress, the positive and one negative trait was.

109. (c)  
Ly. 
$$29 = r$$
  
 $3 \times r^{10} = r$ 

$$\delta\theta = \frac{\partial^2}{\partial}$$

$$\begin{aligned} u &= \frac{\pi}{6}, & i = \frac{\pi}{3}, \\ 3 &= 0, & r = 0, \\ z &= \int_{0}^{23} \cos^{3}r \sin^{3}\theta^{2} \frac{dr}{3}, \\ &= \frac{\pi}{3} \cos^{3} \cos^{3}r \left( 2\sin r \cos^{3} \right)^{3} \sin^{3}\theta \frac{dr}{3}, \\ &= \frac{3}{3} \int_{0}^{\pi^{2}} \cos^{3}r \sin^{3}\theta \cos^{3}\theta \frac{dr}{3}, \\ &= \frac{2}{3} \int_{0}^{\pi^{2}} \cos^{3}r \sin^{3}\theta \cos^{3}\theta \frac{dr}{3}, \\ &= \frac{2}{3} \int_{0}^{\pi^{2}} \cos^{3}r \sin^{3}\theta \frac{dr}{3}, \\ &= \frac{2}{3} \int_{0}^{\pi^{2}} \cos^{3}r \cos^{3}\theta \frac{dr}{3}, \\ &= \frac{2}{3} \int_{0}^{\pi^{2}} \cos^{3}r \cos^{3}r \cos^{3}\theta \frac{dr}{3}, \\ &= \frac{2}{3} \int_{0}^{\pi^{2}} \cos^{3}r \cos^{3}\theta \frac{dr}{3}, \\ &= \frac{2}{3} \int_{0}^{\pi^{2}} \cos^{3}r \cos$$

## 154 (c)

$$y = \int_{0}^{4} \int_{0}^{2} \int_{0}^{2} f(x) dx$$

$$dx = f(x) \qquad dx = \int_{0}^{2} f(x) dx + \frac{d^{2/2}}{dx}$$

$$\int_{0}^{2} \int_{0}^{2} f(x) dx + \int_{0}^{2} f(x) d$$

$$\begin{aligned} \int V(y) \sqrt{y} \, dy &= \left[ V(y) \frac{x^{33}}{3 \cdot 2} \int_{-2}^{2} - \frac{1}{3} \frac{x^{35}}{3 \cdot 2} \right] + i \hat{y} \\ &= \left[ \frac{3}{3} x^{35} + 0 \right] - \frac{2}{3} \int_{-2}^{2} x^{3} \frac{x^{3}}{3 \cdot 2} + i \hat{y} \end{aligned}$$

$$= \frac{2}{3} x^{35} + \frac{24}{3} \frac{x^{32}}{3 \cdot 2} \int_{0}^{2} \frac{x^{3}}{3} \frac{x^{3}}{3 \cdot 2} + \frac{2}{3} \frac{x^{3}}{3} \frac{x^{3}}{3} \frac{x^{3}}{3} + \frac{2}{3} \frac{x^{3}}{3} \frac{x^{3}}{3} + \frac{2}{3} \frac{x^{3}}{3} \frac{x^{3}}{3} + \frac{2}{3} \frac{x^{3}}{3} \frac{x^{3}}{3} + \frac{2}{3} \frac{x^{3}}{3} +$$

## 105. (3)

Curio groteri ne stelatičanih dwayska : V 1994 ili

100. (si

$$\begin{aligned} W_{i}(\lambda) &= \frac{\partial A_{i}}{\partial x_{i}} \frac{-\pi A_{i}}{A_{i}} \frac{\partial A_{i}}{\partial x_{i}} \\ &= \frac{A_{i}}{A_{i}}(\lambda) \frac{\pi}{A_{i}}(\lambda) + \frac{A_{i}}{A_{i}}(\lambda) + \frac{A_{i}}{A_{i}}(\lambda) = \hat{1} \cdot \hat{1} + \hat{1} \\ &= A_{i} \cdot \hat{A}_{i} = A_{i} \end{aligned}$$

107. (d)



in the second second

Alexanderi (12.8)

$$=\frac{1}{2}$$
 is constant to  $\frac{1}{2}$  is  $0.09 \times 0.8$ 

Area allegion bis

$$=\frac{1}{6}$$
 so the global viscose  $1 + \text{basses}(2)$ 

$$= \frac{1}{2} \times 0.0 \times (0.38 \pm 0.35)$$

Area of recipiences

$$=\frac{3}{3} \times \log \operatorname{grav}(\operatorname{addo} k) \cdot \operatorname{boso} \delta)$$

$$\frac{1}{2}\eta_{S}(\alpha_{F} + \frac{1}{2})(0.30 \pm (0.05) - \frac{1}{2})(0.21 \pm 0.05)$$

$$\phi(40) = -i \frac{1}{2} (0.3) \times (4.26 - 9.0) = 9.040$$

polici (a) is coinset.

100. (d)

Object (e) is not true as introdleded enclorings cross product as zero. Thus for vectorise pomostlight! Viol. = 0

rce (b)

Fulfield 
$$\int \vec{P} \cdot \vec{Q}$$
 among a segmention of which from  $r=1$  for  $r=2$ 

$$\begin{aligned} \psi, & y = (1 - \lambda + \beta), & (b) = 0 \text{ subs} (b - 1) \\ (b', y) &= \left[ (y', \lambda, x_1 - yzx_2 - x' \delta) \right]. \end{aligned}$$

Think Buden Spide

$$= \left( \sqrt{2} x dx - y dy - \sqrt{2} dz \right)$$

Politique y = 0, y = 0, y = 0 and y = 0. We see

\*10 /cr

$$\lim_{n\to\infty} |\nabla x| = \int_{\mathbb{R}^n} |\nabla$$

$$= \int_{\mathbb{R}} \mathbf{x} d\mathbf{x} \int_{\mathbb{R}} d\mathbf{r} = \frac{3}{3} \mathbf{x} \frac{d}{3} \mathbf{x}^2 \int_{\mathbb{R}} d\mathbf{r} d\mathbf{r}^2 = \mathbf{x}.$$

l' (⊑l

Proceeding to Sylka - Thoraco

$$\int_{\mathcal{C}} d x_i f_i^j = \int_{\mathcal{C}} (x_i \circ d x_i) d$$

112, 150

$$\lim_{n\to\infty} \left( \frac{a_n \sin n}{1} \right) = \frac{1}{n} \frac{\sin n}{2} = n + \frac{n}{2} = 1$$

Since, it 
$$\frac{8\Gamma \pi}{\lambda} = 0$$

113. (a)

$$\lim_{n\to\infty}\frac{2^n}{n}:=\frac{n}{2}\lim_n$$

gene-Hispat-IR IA (Note Others are numerous - klannam natarkam lakasa ng aksipanalam i

$$= e^{-\frac{1}{2} \frac{1}{16 \pi^2}} \frac{\partial \theta (\eta ) e^{-\frac{1}{2} \theta (\eta ) }}{\partial \theta (\eta ) e^{-\frac{1}{2} \theta (\eta ) }} = 0.55 \, e^{-\frac{1}{2} \theta (\eta ) }$$

114. (9)

$$\frac{a + 5 \, \Gamma.5}{1 + 4384}$$

epoving Dilbegislande

$$\lim_{t\to\infty}\frac{\frac{\partial}{\partial x}(x-S\Gamma x)}{\frac{\partial}{\partial x}(x-x\otimes x)}=\lim_{t\to\infty}\frac{1}{x}\frac{-\cos(x)}{S\Gamma x}$$

$$(0.83010)^{\frac{1}{6}}(0.31)$$

Again aphyrig of Haso bloru d

$$\frac{\partial}{\partial x^2} \frac{\partial}{\partial x^2} \frac{(1 + c(x)x)}{(1 + c(x)x)} = \frac{\partial}{\partial x^2} - 0$$

115 (c)

$$\lim_{\varepsilon \to 0} \frac{(e^{2\varepsilon} - 1)}{\operatorname{sight}} = \operatorname{Hight} \left[ \frac{e^{2\varepsilon}}{e} \right] \leq \varepsilon .$$

-Aprily (1) Haap to % 110,

$$\lim_{x \to 0} \frac{24^{2x}}{42x^{2}} = \frac{22}{48} + \frac{1}{4}$$

5.16. (5)

$$\lim_{n\to\infty} \frac{1-\frac{1}{n}}{1-\frac{1}{n}} = e^{\frac{1}{n}\frac{1}{n}} = e^{\frac{1}{n}} = 0$$

(17. (4)

118. (d)

្តភ្នំនែក ដោកមាននានាក្រាក់ប៉ា

$$q = \bigsqcup_{x \to x} q_{\overline{x}}(1 + \sum_{x \in x^{(d)}} f(x) = 0/2)$$

119. (a)

 $\phi := (h_0 \otimes \phi_0)(h_0 \otimes h_0)$  where h(0) = -1 for h similarly  $h(0) \in h$  is not form  $h(0) \in \mathbb{N}$ 

$$\label{eq:constraints} \langle (1,g)\rangle = g(x) + i \langle (g_1 + 0)y + (g_2) \rangle \otimes (G,B)$$

where  $g(y) \equiv 0$  is some value of :

$$\chi_{\mathcal{F}_{i}} = -\gamma_{\mathcal{F}_{i}} - \gamma_{\mathcal{F}_{i}} + \gamma_{$$

$$\label{eq:condition} \begin{split} \eta(y) &= \theta(\theta + y) \text{ or } \eta(u, y + \theta) \text{ or } \theta(x, y + y) \\ &= \lim_{n \to \infty} \eta(y, x) \text{ or a condition} \\ \chi(y) &= 0 \end{split}$$

- (i) We cannot see that the matter value invariable of  $f(x) \in \{ \ln x(0,0) \}$
- (a) As  $\nabla r_i(0, 1)$  (b) (a) As a least from the  $1 + k! + k!^2$  (c) were as from 1 + k + 1

$$y_{\text{color}} = y(x) + 0.5 + 51 + y(y)/2 + 0.00$$

 $\label{eq:problem} p(x) = Q(x) \text{ as the } x \in A \cap A^* .$ 

$$g_{ij} = -g_{ij} = -g_{ij} = g_{ij} \text{ for earning } i \in \{0, 1\}$$

-другод другий эт элтиост уул (Я — yanould bo kes tiga. Т 4 инфпонто ичну 4 % инфрекция

128. (c)

$$\frac{d_{1}(0)}{d_{2}(0)} = \frac{d_{1}(0)}{d_{2}(0)} \frac{d_{2}(0)}{d_{2}(0)} \frac{d_{2}(0)}{d_{2}($$

graph and purply and a section and become series.

$$G_{1,2}(G_{1}=0)$$

Since neopytical is nabboodered in rithwill easiers to zone, three half in the west because are the second of the second or the

Such also in regard the such that increase in the  $\pi N_{\rm s}$  the supplying (y) is some nature of the Hilbert and space in the regard of the  $\pi N_{\rm s}$  where  $\pi N_{\rm s}$  is the formula of the regard twenty (y).

Space at the firety by afterns of Holl's theorem are specified the conclusion of Holl's filteriors is  $0, m_{\rm s}$  .

$$|g|_{L^{2}(\mathbb{R}^{N})}\left[\frac{\sigma}{2}-\frac{\Gamma}{2}\right]|_{L^{2}(\mathbb{R}^{N})}\left(H(\mathbb{R}^{N})^{n}(H)+O(n(H))\right]$$

$$\underline{H}\theta \leq \frac{2\pi}{100} \cdot \frac{\overline{\mathcal{F}}^{(k)}}{\epsilon} \cdot \operatorname{coup}(\theta \circ t) \, f(\theta) \neq 0$$

It also the list or indically way from to liste in a M(a) = 0 for all volues of 0 in the nice possible with high second section with his volue. Higher that be well as the second section of the second secon

121, 90

1<u>22,</u> ફતા.

$$\frac{d(b)}{dx^2} = 0$$

$$\frac{d(b)}{dx^2} = 0$$

$$\frac{d(b)}{dx} = 0$$

$$= 0$$

$$\frac{d(b)}{dx} = 0$$

$$= 0$$

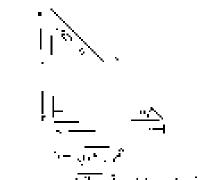
$$\frac{d(b)}{dx} = 0$$

$$\frac{d(b)}{dx} = 0$$

$$\frac{d(b)}{dx} = 0$$

$$\frac{d(b)}{dx} = 0$$

129. (c)



 $g_{NYMWH,N}$  ့  $\sqrt{a^2-}\gamma^2=k$  (conclusion)

$$\begin{aligned} v^2 &= V^2 - (k - n)^2 \\ &= V^2 - k^2 - (k_0) \\ \Delta p v_0 &= \frac{1}{2} (k_0 + V) \\ \Delta r^2 &= \frac{k^2}{2} (k^2 - 2k_0) \end{aligned}$$

$$\omega(\mathbf{d}_{t}) = R(t) = R^{2} + \frac{\sqrt{2}}{2} \left( R^{2} + 2\epsilon_{0} \right)$$

$$\begin{aligned} F(x) &= \frac{1}{2} (2S^2x - 6x x^2) \\ F'(x) &= 0 \\ F(x) &= Sx_x^2 = 0 \\ x &= \frac{\lambda}{5} \sqrt{6} \end{aligned}$$

At 
$$\gamma = \frac{n}{2}$$
 , then the

$$\cdots \triangleq \text{ So, is finite, if it in which } = \frac{h}{h}$$

$$x = \frac{x^2 + x^2 - \frac{2x^2}{5} - \frac{x^2}{3}}{x^2 - \frac{x^2}{3}}$$

$$x = \frac{x}{35}$$

$$\sin y = \frac{x}{3} - \sqrt{5}$$

$$\begin{aligned} \frac{\partial Z}{\partial x} &= |\mathbf{v}|^{2} \left( \mathbf{x} \mathbf{y} \right) + \frac{\mathbf{y} \mathbf{y}}{\mathbf{y} \mathbf{y}} \\ \frac{\partial Z}{\partial x} &= |\mathbf{y}|^{2} \left[ \mathbf{y} (\mathbf{y} \mathbf{y}) - \mathbf{1} \right] \\ \frac{\partial Z}{\partial x} &= |\mathbf{u}|^{2} \left[ \mathbf{y} (\mathbf{y} \mathbf{y}) - \mathbf{1} \right] \\ \frac{\partial Z}{\partial x} &= |\mathbf{u}|^{2} \left[ \mathbf{y} (\mathbf{y} \mathbf{y}) + \mathbf{1} \right] \\ \frac{\partial Z}{\partial x} &= |\mathbf{u}|^{2} \left[ \mathbf{y} (\mathbf{y} \mathbf{y}) + \mathbf{1} \right] \end{aligned} \qquad (3) 1$$
Here, 
$$\mathbf{v} \frac{\partial Z}{\partial x} = \mathbf{v} \frac{\partial Z}{\partial y}$$

125 (2)

$$\begin{aligned} f(x) &= x \, x^{-1} \\ f(x) &= x^{-1} - y \, x^{-1} + 0 \\ f(x^{-1} - x) &= x^{-1} \end{aligned}$$

ightarrow = 1 (order on -1 ) only offer  $x \in \operatorname{supp}$  of does not be rought for (their injurys.)

New we have a Hepkertones  $\mathbf{e}_{i,N} = 1$  , we have Direktuar minimum ordanala ming

128. (c)

$$f(x) = (x - x)^{7/8} = (\frac{x}{2}(x - 1)^{7})$$

As for a country of  $\mathcal{Y}_{\lambda}$  , property simplicity кабоско Смаланату 🗀 р

127. !h:

$$\begin{aligned} & \frac{\partial \lambda}{\partial t} (z + x^2 + 3z^2 + 24x + 100 + \omega + 43, 1) \\ & \frac{\partial (z_1 - \omega)^2}{\partial t} (\omega_0 + 2\omega + 2, 1) \\ & \frac{\partial (z_2 - \omega)^2}{\partial t} (z + \omega + 2, 1) \end{aligned}$$

ியின்**por**table நகிக்கு கூ

$$\theta = 0$$
 =  $27 \cdot 27 = 7$  +  $100 = 118$  +  $0 = 0$  =  $0 \cdot 12 = 48 = 100 = 128$  +  $130 = 24 \cdot 24 = 120 \cdot 30$ 

Не к 9 дилест по от в подрежду – 364 г. п. 8 <u>а. .</u>

129. (a)

$$\begin{aligned} \mathbf{f}(t) &= e^{-t} - (2e^{-t}) \\ \mathbf{f}(t) &= -\mathbf{g} \cdot \mathbf{g} \cdot 2e^{-t} \end{aligned}$$

 $\overline{C}(t)$  in the following value of  $(g, \pm \gamma)$ 

$$T(t) = 0 = -x^2 + 2x^2 + 2x^2 + 2x^2 + 2x^2 + 2x^2 + 2x^2 + 1 + 2x^2 +$$

125 Sa

$$f(z) = \frac{1}{1-z} \cdot z = 0$$

$$\frac{1+1+\lambda}{1+\gamma} = 1$$

$$\frac{a}{\ln a} = 0$$

$$f^{\alpha}(z) = \frac{1}{f^{\alpha} + z^{\alpha}}$$

 $\mathbb{C}_{\mathcal{M}}$  . Where assuming the mass s = 0

$$\frac{f(0)}{2} = \frac{f(0)}{2} (1 - 0) = 0 = 0$$

130, 3%

$$\begin{aligned} f(x) &= S \cdot 7 - 2J_1^2 - 15 x + S \\ &= f(x) + 2J_2 - 15 x + 7 \\ f'(x) &= 0 \\ f(x) &= 0 \\ f(x) &= 0 \\ f'(x) &= 0 \\ f'(x) &= 0 \\ f'(x) &= 0 \end{aligned}$$

ply is after contained in July's

The allege is resemble above at the fifthese spirits

$$f(0) = 2$$
  
 $f(1) = 2$   
 $f(2) = 3$   
 $f(2) = 5$ 

151. (b)

$$f = \frac{2}{3} \frac{(r + \frac{3}{2})^2 \frac{4}{3} \frac{4}{3} (r + \frac{3}{2})^2}{(4r + \frac{3}{2})^2 \frac{4}{3} \frac{4}{3} (r + \frac{3}{2})^2}$$

Taking z = 1 = 2 + 1/2 + 27 $|z_1 z_2 - z_3| z_3 + 1 + 2/2 + 2$ 

$$\begin{aligned} \mathbf{r} &= \frac{1}{1} \frac{1}{2^{2} + 0000} \times \frac{1}{2^{2}} \\ \mathbf{H}^{2} &= \frac{1}{2^{2} + 0000} \frac{1}{10000} \\ \mathbf{r}^{2} &= \frac{2^{2} + 0000}{2^{2} + 0000} \\ \mathbf{r}^{2} &= \frac{2^{2} + 100}{20000} \times \frac{1}{1000} \mathbf{r}^{2} \mathbf$$

102 Sel.

$$\begin{split} & = \int_{0}^{\infty} x \sin \theta dx + \exp x \\ & = \int_{0}^{\infty} x \sin \theta dx + \int_{0}^{\infty} x \sin x dx = i \varphi x \\ & = \int_{0}^{\infty} x \sin x dx + \int_{0}^{\infty} (x \sin x dx + i \varphi) \\ & = \int_{0}^{\infty} x \sin x dx + \int_{0}^{\infty} (x \sin x dx + i \varphi) \\ & = \int_{0}^{\infty} x \sin x dx + \int_{0}^{\infty} (x \sin x + i \varphi) dx + \int_{0}^{\infty} x \sin x dx + \int_{0}^{\infty}$$

135. (a)

$$\begin{split} \int_{0}^{\pi} d^{2} \phi \partial S \phi \, d\phi \, &= \, \int_{0}^{\pi} \left( \sin \phi - 2 \phi \right) \, \left( \cos \phi \right) \, F^{2g} + \sin \phi \, \Big|_{W}^{2g} \\ &= \pi \left( -2 + 2 \phi \right) + \, \left( -2 + 2 \phi \right) \, d\phi \end{split}$$

134. (n)

$$\begin{aligned} \mathcal{B} &= y^2 \cdot z \\ w_{XB} &= \frac{\begin{vmatrix} 1 & 0 & 0 \\ 0 & 0 & 0 \end{vmatrix}}{\begin{vmatrix} 1 & 0 & 0 \\ 0 & 0 & 0 \end{vmatrix}} \\ &= \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \\ &= \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \\ &= \frac{1}{2} $

ين پي ky- ، where  ${\bf r}_{i}$ 

$$\int_{\mathcal{S}} \mathcal{F}(x) dx = \int_{\mathcal{S}} (\mathcal{F}(x) \tilde{f}(x) + \tilde{f}(x) dx$$

$$= \int_{\mathcal{S}} (-1) dx + \int_{\mathcal{S}} (\tilde{f}(x) + \tilde{f}(x) dx + \tilde{f$$

of the Silve into denote the  $i^2$  ,  $i^2 = i$  ,  $i^2 = \sigma(i)^2$  ,  $i^2 = i$ 

135. (b)

$$I = \int_{0}^{2\pi} e^{x} dy \int_{0}^{2\pi} dx$$

$$I = \int_{0}^{2\pi} (e^{x})^{2} dy \int_{0}^{2\pi} dx^{2} dx^{2}$$

$$I = \int_{0}^{2\pi} (e^{x})^{2} - e^{x} dx^{2} dx^{2}$$

$$I = \int_{0}^{2\pi} (e^{x})^{2} - e^{x} dx^{2} dx^{2} dx^{2}$$

$$I = \int_{0}^{2\pi} (e^{x})^{2} - e^{x} dx^{2} dx^{2} dx^{2} dx^{2} dx^{2} dx^{2} dx^{2} dx^{2}$$

$$I = \int_{0}^{2\pi} (e^{x})^{2} - e^{x} dx^{2} $

120 (b)

$$\int_{-\infty}^{\infty} \int_{-\infty}^{\infty} \frac{2\pi x}{x^{n-1}} \frac{x}{x^{n-1}} \frac{x}{x^{n}} \int_{-\infty}^{\infty} dx \int_{-\infty}^{\infty} dx$$

$$\frac{x}{2} = \frac{y}{2}$$

$$\frac{y}{2} = \frac{y}{2}$$

$$\frac{y}{2} = \frac{y}{2}$$

$$\frac{y}{2} = \frac{y}{2}$$

$$\frac{y}{2} = \frac{y}{2} = \frac{y}{2} = \frac{y}{2} = \frac{y}{2} = \frac{y}{2} = y$$

$$\frac{y}{2} = \frac{y}{2} = \frac{y}{2} = \frac{y}{2} = \frac{y}{2} = \frac{y}{2} = y$$

 $\mathbb{R}^{n \times n}$  (experience)  $= s \int \int dx dx \, dy$ 

$$\begin{aligned} \partial y &= \frac{1}{2}, & \partial y &= \frac$$

107 (b)

For the conception series, 
$$\det \begin{bmatrix} 1 & 1 & 1 \\ 2 & 3 & 1 \end{bmatrix}$$
 interpolation

$$\frac{1}{1684} \frac{9}{100} \frac{112}{100} \frac{2}{100} \frac{100}{100} \frac{100}{10$$

 $\sim \Pi$  are thick wellowers incody at  $r_{
m c}$  and m c

100 (2)

$$\begin{split} \vec{F} &= x \times [\vec{t} + 2\pi x^2 \vec{x}_1^T + 2y^2] \times [z] \\ &= \begin{bmatrix} i & -\frac{1}{2} & -\vec{x} \\ -\frac{1}{2}x & -\frac{1}{2}x & -\alpha x \\ -\frac{1}{2}x^2 & -2\pi x^2 2x^2 + 2y^2 x^2 \end{bmatrix} \\ &= 3 - \frac{6}{6}x (2x^2 x^2) + \frac{6}{6}x (3y x^2) \end{bmatrix} \\ &= 4 \left[ \frac{6}{6}x (2x^2 x^2) + \frac{6}{6}x (3y x^2) \right] \\ &= 1 \left[ \frac{6}{2}x (2x^2 x^2) + \frac{6}{2}x (3y x^2) \right] \\ &= 1 \left[ \frac{6}{2}x (2x^2 x^2) + \frac{6}{2}x (3x^2 x^2) \right] \end{split}$$

$$\begin{aligned} \nabla z F &= z \left[ 4 \partial z^2 + (2 \partial z^2) + \frac{z}{2} (2 \partial z^2) \right] \\ &+ \left[ -2 y^2 + 0 \right] \\ &= z + (2 z - 2 z y^2) \hat{y}^2 + (2 z^2 z y^2 - (2 y^2 z) z z^2) \end{aligned}$$

109. (e)

$$\begin{aligned} \hat{x} &= \mathbf{x}^2 \cdot \hat{\mathbf{I}} + \mathbf{y} \mathbf{y} + \mathbf{y} \mathbf{z}^2 \hat{\mathbf{z}} \\ \nabla \cdot \hat{x}^2 &= \frac{\partial}{\partial x} (\hat{x}^2 \mathbf{z}) + \frac{\partial}{\partial y} (\mathbf{y} \mathbf{y}^2 + \frac{\partial}{\partial z}) \mathbf{y} \mathbf{z}^2 \\ \nabla \cdot \hat{x}^2 &= 2\mathbf{z} \mathbf{z} - \mathbf{z} - 2\mathbf{y} \mathbf{z} \\ \therefore \nabla \cdot \hat{x}^2 \mathbf{y} \mathbf{z} - \mathbf{z} + 2\mathbf{z} \mathbf{z} \\ &= 2\mathbf{z} \mathbf{z} + \mathbf{z} + 2\mathbf{z} \mathbf{z} + \mathbf{z} \mathbf{z} \mathbf{z} \\ &= 2\mathbf{z} \mathbf{z} + (\mathbf{z} + \mathbf{z}) \mathbf{z} \mathbf{z} \mathbf{z} \mathbf{z} \end{aligned}$$

140. jaj

$$\begin{split} & \tilde{x} = (\tilde{x}^2 + \tilde{y}^2 + r\tilde{y}^2) \\ \tilde{x}^2 \frac{d(\tilde{x}^2)}{dr} + \frac{2d(\tilde{x}^2)}{d\tilde{y}} + 2d(\tilde{x}^2) + r\tilde{y}^2 + r$$

$$\operatorname{Brg}\left(\left( \operatorname{st}\left( i\right) \otimes \operatorname{pr}\left( \operatorname{pr}\left( i\right) \right) \right) \right)$$

14' (c)

$$y = \int_{0}^{\infty} \left| \frac{1}{2} \left| \frac{1}{2} \right|^{2} dt$$

$$0.2 y = \int_{0}^{\infty} \left| \frac{1}{2} \left| \frac{1}{2} \left| \frac{1}{2} \right| \right|^{2} dt$$

which is finite to motion to

To constrain the initial form, we have takes

$$= \frac{p_{i,k,j}(\cdot \pm 1)}{p_{i,k,j}(\cdot \pm 1)} + \frac{p_{i,k,j}(\cdot \pm 1)}{p_{i,k,j}(\cdot \pm 1)} + \frac{1}{p_{i,k,j}(\cdot \pm 1)}$$

Now it, with 
$$\frac{\theta}{t}$$
 horns

Calculus 20

Uning a Loss Breinle

$$-\frac{2^{N} - \frac{1}{\sqrt{2}}}{2^{N} + \frac{1}{\sqrt{2}}} = \lim_{N \to \infty} \frac{2^{N} - 2^{N}}{N} = 2^{N}$$

$$= \sqrt{2^{N} - 2^{N}}$$

$$= \sqrt{2^{N} - 2^{N}}$$

42. (a)

$$\int_{-\infty}^{\infty} \frac{1-(1+s)^2 \frac{1}{2}}{2s^2}$$
putting the  $s \to 0$ 
to sget  $\frac{ds}{ds}$  from

корунд .<sup>Ч</sup>Егжийлий

$$\Rightarrow \lim_{t \to 0} \frac{2\pi i h(t^2)}{8\pi^2}$$

$$\Rightarrow \lim_{t \to 0} \frac{9\pi i h(t^2)}{4\pi^2}$$

$$\Rightarrow \frac{1}{4} \lim_{t \to 0} \frac{9\pi i h(t^2)}{4\pi^2}$$

$$\Rightarrow \frac{1}{4} \lim_{t \to 0} \frac{9\pi i h(t^2)}{4\pi^2} = \left[ |\mathbf{x}| + \frac{1}{4} \right]$$

148 Gu:

$$\max_{i \in \mathcal{D}} \frac{|S(f)|_{X}}{|S(f)|_{X} + |C(f)|_{X}} = 1 \cdot \sqrt{1 \cdot \frac{-|A(f)|_{X}}{|A(f)|_{X} + |A(f)|_{X}}} = \frac{2}{1} + 0$$

(Mote: Gines the fund on the entry that ag to 300 and grounds use all less table (i.e.)

144 - (6)

$$\begin{aligned} & v = \lim_{t \to 0} v^{(t)} \\ & \log v = \lim_{t \to 0} \log v^{(t)} \\ & \log v = \lim_{t \to 0} \frac{\log v^{(t)}}{t} \end{aligned}$$

agonesis i aromi Haspitale rela

$$co y = \int_{-\infty}^{\infty} \frac{dy}{4}$$

$$bu y = 0 \qquad \text{so } y = 1$$

146 (c)

$$\begin{split} &\lim_{t\to\infty} (t*e^2)^{\frac{1}{2}t} \\ &\log |y| = \lim_{t\to\infty} \log^2 \left(||f'(y)|| + \lim_{t\to\infty} \frac{\log |y| + e^{\frac{1}{2}t}}{e^{\frac{1}{2}t}} \right) \end{split}$$

 $\omega_{\rm tot}$  for a spin y N Hospital single

Appinger the goung of the mapping Possible of

$$cg(x) = \frac{10}{c^2 c_B} - g^2 (g^2 + \frac{1}{e^2 - 2g})$$

$$\log x = \frac{g}{g} = 0$$

$$\Rightarrow \qquad g = 1$$

145. TeV

Statement (: 1 a remain......t | n | 1 | 1]. Le. (a) Ancek (: 19 a.a. ← 160).

We provide the continuous  $x \in \mathbb{R}^n$ 

$$\text{Lock}(A_{1})_{i} = \prod_{k=1}^{n} \frac{1}{\frac{1}{N_{i}}} = \prod_{k=1}^{n} \frac{1}{\frac{1}{N_{i}}} = \prod_{k=1}^{n} \frac{1}{\frac{1}{N_{i}}} \cdots \cdots$$

$$\text{Dig} = \{ v_i \} + \lim_{n \to \infty} \frac{1}{\sqrt{n}} = \lim_{n \to \infty} \frac{1}{\sqrt{n}} = \lim_{n \to \infty} \frac{1}{\sqrt{n}} = 1 \text{ in }$$

Le0 Mint + Biground.

A symmetri ili e false.

Statemani 2,  $\ell \times m$  counded is  $\{A, V_i\}$  3 and g(x) = g(x) , and so we saw the function is published.

A Waterment Elizabeth

Statement & Alix not care and finite

$$\begin{split} Z_{1} &= \frac{\left| \frac{1}{4} \sum_{i} k_{i}^{2} g_{i} \right|}{2\pi} \frac{1}{4} \left| \frac{1}{2} \sum_{i} \frac{k_{i}^{2} g_{i}}{2\pi} \frac{1}{4} \left| \frac{1}{2} \sum_{i} \frac{k_{i}^{2} g_{i}}{2\pi} \frac{1}{4} \frac{1}{4} \right| \\ &= \frac{1}{2} \left| \frac{1}{2} \left| \frac{1}{4} \sum_{i} \left| \frac{1}{4} \right| \right| = 0 \end{split}$$

ŞgiAli-inniza dianUli di⇔ IX Semmoni Jestikie

147. (6)

പ്രാപ്പ് പുപ്പിൽവിട്ടിന്റെ കഴിച്ച് തന്നെ വേധ സംഘടന

By haptenge meaning the income.

$$\rho_{(a)}) = \frac{f(b) \cdot a - b}{a - b} = \frac{a}{b} - 1$$

$$\begin{aligned} -2x + 3x^2 &= 1 \\ x + 4x + \frac{3}{8} \\ x + 3x + 1 &= 1 \\ x + 2x + 1 &= 1 \end{aligned}$$

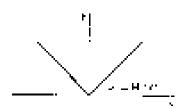
148 (d)

 $0.61078 \times 1000$  intrinum at  $1.00 z_{\rm p}$ 

$$f(x_0) = 0$$

and 
$$f'(y_0) \in \Gamma$$

149 (g)



150. Soc.

On table, it same near the high scale 
$$\begin{bmatrix} a & \phi \\ B & B \end{bmatrix}$$

Steen at 
$$t : t = A$$
  

$$|A| = a\sigma \cdot C$$

Whenever  $B^{*}$  is a ways that a legality important determination (  $\omega$  ) define when  $\omega^{2}\in \mathbb{C}$ 

So we need to ray in by

$$p_{ij} = q_i(1+i)$$
  
= 2.5 + 0.5 × -16 + g(1+i)g<sup>2</sup> + g/g

$$\frac{\alpha(A')}{2a} \cdot = 2a \cdot 6 \cdot A$$

 $\Rightarrow$  3 = 12 5  $\pm$ 0.05 y stall grown point

Since 
$$\left|\frac{2^{n}}{dt}\right|^{2^{n}} = 2^{n} \le 0$$

we have a matrix  $x_1 y_1 \le x_2 \ge x_3$ 

Filteran Zeinb, Can-sponding value alin Hist. New the maximum cathod the emphasis

$$\|\mathbf{I}_{A}\|_{L^{2}(\mathbb{R}^{N}+1)}\leq s-n$$

15°. (b)

$$\begin{aligned} f(x) &= c f^*(x + y - 1) \\ f'(x) &= c f(2x + 1) + a f(y' + y - 1) \\ &= a^*(x + x^2) + (a^*(y' + y - 1)) \end{aligned}$$

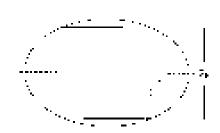
Palling first in the get-

$$t_{\rm c} = 0 \quad t_{\rm H} \quad v = 1$$

$$\begin{split} P(x) &= e^{-x}(1-2x) - e^{-x}(1-e^{-x}) + e^{-x}(1-4x+e^{2}) \\ P(x) &= 0, \ P(x) = 1 \qquad \text{(so explains a matrix and } \\ P(x) &= 1-e^{-x}(x) - \frac{1}{e^{-x}} \qquad \text{(so explains a matrix and } \\ O(x) \text{ Supple} (0) \text{ shows } + \text{single and } \text{matrix and } \end{split}$$

t=0 and disingle was Maker the  $g_{t,k}=1$  ,

182. Bal.



AMA Checter; e

$$\begin{aligned} \mathbf{e}_{t} &= \mathbf{e}_{t}, \\ \mathbf{e}_{t} &= (\mathbf{e}_{t}, \mathbf{e}_{t}^{2}) \\ &= (\mathbf{e}_{t}^{2})^{2} \\ &= (\mathbf{e}_{t}^{2})^{2} - \mathbf{e}_{t}^{2} \end{aligned}$$

$$y(t) = x^2 + xy^2 y^2$$

$$\frac{2}{2\pi} \left[ 4(x^2 + x^2) \right] = 0$$

$$4(2x - 4x^2) = 0$$

We get 
$$y = 1 \frac{1}{y_0}$$
  
 $y = \pm \frac{1}{\sqrt{8}}$ 

After 
$$y = 4y + \frac{1}{\sqrt{2}} \sqrt{\frac{1}{\sqrt{8}}} = 1$$

(a).

$$\frac{\partial}{\partial y}(y^2 - y^2) = g_{\lambda^2}$$

ariab podvolba wie

$$=\frac{d}{dt}\left( \partial v - 4 x t + d \right)$$

Tipm given bond flori

154. (8)

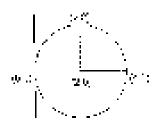
$$\begin{aligned} & g(x) \cdot e^{i\frac{x^2}{4}\frac{1}{2}} = \frac{1}{2} \cdot 26 & \text{s. (b)} \\ & g(x) = \frac{1}{2} \cdot \ln \exp(abbx + ib) \\ & g\left(\frac{1}{2}\right) \cdot N^2(x) = x - 28 & \text{s. (26)} \\ & \text{Equation } (1) \times x = -8p \text{ effor } (2) \times p \end{aligned}$$

$$(1) \times (a \rightarrow a^2 \eta_{ab}) : 28.5 \left( \frac{p^2}{a} \right) = \frac{3}{2} - 2.88$$

$$\langle g_{(2)} \rangle = \frac{1}{2} \sin \frac{1}{2} \int_{Y_{1}}^{Y_{2}} \left( |F^{2}|^{2} A \right) = 0.5$$

$$\begin{aligned} \mathcal{F}_{1}(z) &= p^{2}f(z) = \frac{c}{c} - 25c + 6c + 5cb, \\ &\Rightarrow (a) - (b) + f(c) = \frac{c}{c} - 6c + 200c - 2c, \\ &\Rightarrow - (c) - \frac{1}{c}, \quad \frac{1}{3^{2}} \left[ \frac{a}{c} - 2c + 200c - 2c, \\ - \frac{1}{c}, \quad \frac{1}{3^{2}} \left[ \frac{a}{c} - 2c + 250c - 2c, \\ - \frac{1}{c^{2} + 10} \left[ c \int_{0}^{1} (c + 6c + 25c - c) \int_{0}^{1} (ds) \right] \right] \\ &= - \frac{1}{a^{2} - c^{2}} \left[ ah^{2} h^{2} - \frac{b}{2} h^{2} + 25h + \frac{1}{c^{2}} h^{2} \right] \\ &= - \frac{1}{c^{2} - c^{2}} \left[ ah^{2} h^{2} - 25h + \frac{1}{c^{2}} h^{2} \right] \end{aligned}$$

155 **9**51.



 $\mathcal{L}_{t}=\mathcal{D}(k+1)/(k+1)Z(k+1)$  is an index of vacuus Z in so the specific scale of  $\mathcal{L}$ 

) mo w (⇔a.1 1 am)4 ((to)≥ 2) €

ine = 
$$\frac{\text{Distance}}{\text{Suppl}}$$
  
=  $\frac{\binom{n_1 + 1}{2}}{\binom{n_2}{2}} = \frac{2\pi \Omega}{1.57} = \frac{\pi}{1.57} = 0.950$ 

156 85.

$$\begin{split} S &= \int_{\gamma=0}^{2\pi} \overline{\frac{2\pi^{2}}{\sqrt{2\pi^{2}}}} \left[ \frac{(y)^{2}}{\sqrt{2}} + \left( \frac{2\pi^{2}}{\sqrt{2}} \right)^{2} \right] \\ S &= \frac{(2\pi^{2})^{2}}{(2\pi^{2})^{2}} \left[ -2\pi^{2} \right]^{2} + \left( 2\pi^{2} \right)^{2} + \left( \frac{2\pi^{2}}{\pi^{2}} \right)^{2} \\ &= \int_{\gamma=0}^{2\pi^{2}} \frac{1}{\sqrt{2\pi^{2}}} \left( \frac{Z_{\gamma}}{\pi^{2}} \right)^{2p} = \sqrt{1 \cdot \frac{\sqrt{\frac{2\pi^{2}}{\pi^{2}}}}{\sqrt{2\pi^{2}}}} \left[ \frac{Z_{\gamma}}{\pi^{2}} \right]^{2p} \\ &= \sqrt{1 + \left( \frac{Z_{\gamma}}{\pi^{2}} \right)^{2}} \left[ \frac{Z_{\gamma}}{\pi^{2}} \right]^{2p} = 1 \cdot 2pS \end{split}$$

157 59

$$\begin{aligned} \nabla_{t} \psi \, dx \, dx &= & \prod_{i \neq j} f(y_{i,j}) (i) \, dx \, dy \, = & \prod_{i \neq j} g^{i} \, dx \, dy \\ &= & \left[ \left[ e^{i \phi} \int_{\mathbb{R}^{2}} dy \, dy \, dy \, dy \, dy \right] \right] \\ &= & \left[ \left( e^{i \phi} - y^{i} \right) \right] + \left( e^{i \phi} - y^{i} \right) + \left( e^{i \phi} - y^{i} \right) \\ &= & \left( e^{i \phi} - y^{i} \right) \, = \left( e^{i \phi} - y^{i} \right) + \left( e^{i \phi} - y^{i} \right) \\ &= & \left( e^{i \phi} - y^{i} \right) \, = \left( e^{i \phi} - y^{i} \right) \, dy \, dy \end{aligned}$$

158. (c)

$$u = \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_{0}^{\pi} \eta(x, y) \, dx \, dy$$

Limitaria:

Lower in a rich

Upper to, x = y

Limit of vo

Thrower and t > -C

 $I_{A,B,B}(\mathbf{r},\mathbf{r},\mathbf{r}) = \mathbf{r} \cdot \mathbf{r} + \mathbf{r}$ 

Jacob spect order of leta youlker time of y

militativ.

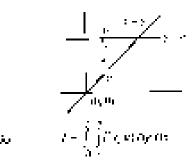
Lipo⊷inti√e...

Upo $\rightarrow$  to the C

Limit of all

 $_{\rm c}$  when limit a=0

Opped to t = 0



109, 331.

$$S(x, \mathcal{F}, \mathcal{F}) = f + 2g_{\mathcal{F}}$$
 
$$S(x) = \frac{1}{2g_{\mathcal{F}}} - 2g_{\mathcal{F}} + 2g_{\mathcal{F}}$$
 
$$S(x)_{\mathcal{F}, \mathcal{F}_{\mathcal{F}}, \mathcal{F}_{\mathcal{F}}, \mathcal{F}_{\mathcal{F}}} = 4\tilde{k} + 2g_{\mathcal{F}}^{2} = 2\tilde{k}$$
 
$$S(x)_{\mathcal{F}, \mathcal{F}_{\mathcal{F}}, \mathcal{F}_{\mathcal{F}}, \mathcal{F}_{\mathcal{F}}, \mathcal{F}_{\mathcal{F}}} = 4\tilde{k} + 2g_{\mathcal{F}}^{2} + 2g_{\mathcal{F}}^{2}$$
 
$$S(x)_{\mathcal{F}, \mathcal{F}_{\mathcal{F}}, \mathcal{F}_{\mathcal{F}}, \mathcal{F}_{\mathcal{F}}, \mathcal{F}_{\mathcal{F}}} = 2g_{\mathcal{F}}^{2} + 2g_{\mathcal{F$$

$$= (40 - 15) = 66) \frac{8 + 3 + 5}{35}$$
$$= \frac{4 - 12}{36} \cdot 6 = \frac{13}{36}$$
$$= -\frac{736}{2} \cdot 4 - 5765$$

1<del>3</del>0. (9)

Contains after 
$$=$$

$$\begin{vmatrix}
2 & j & k \\
2j & 2j & k \\
2j & 2j^2 & p^2
\end{vmatrix}$$

$$= i \left[ \frac{n}{dy} (y^2) \frac{3}{3} (3y^2) \right]$$

$$= j \left[ \frac{n}{dy} (y^2) \frac{3}{3} (3y^2) \right]$$

$$= j \left[ \frac{n}{dy} (y^2) \frac{3}{3} (2y^2) \right]$$

$$= k \left[ \frac{n}{dy} (y^2) \frac{3}{3} (2y^2) \right]$$

$$= j \left[ \frac{n}{dy} (y^2) \frac{3}{3} (2y^2) \right]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y^2 + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y + 6y \right], \quad j \in [0, 1]$$

$$= j \left[ 2y +$$

181. (c)

162. (e)

$$\frac{dy_1(y) = x^2 - 3y^2}{y - x^2 - y^2} = \frac{3y^2}{2} = \frac$$

Isomoralio if a xiii 1<sub>50</sub>8,

$$\overline{\nabla} (z) = \left( \frac{2\psi}{2\pi} + \frac{1}{2} \frac{ds}{dy} + 2\omega_0^2 + 2\phi_0^2 \right)$$

 $\nabla \Delta_{M(K(t),R)} = (\widetilde{N} + \widetilde{Z}_1)$ 

The natural vector is  $\vec{S} = (n^2 + 2)^2$ 

Magnitude of checking operation of the  $\rho_{12} \geqslant$ 

$$\operatorname{st}(1,1) \circ + \circ_{\operatorname{cr}, \mathcal{L}}$$

$$\nabla x = \left(\frac{\partial f}{\partial x} + \frac{\partial f}{\partial y} + \frac{\partial f}{\partial y} + \frac{\partial f}{\partial y} + \frac{\partial f}{\partial y} \right)$$

$$\begin{aligned} & \forall f \Big|_{f = F} = \mathbb{E} f \cdot 2 \widehat{f} \\ & \Big| \widehat{\delta} \Big| = -\beta \mathbb{E} f \widehat{A} + 2 \sqrt{\delta} \Big| \\ & \widehat{\sigma} \Big| = \frac{2 \widehat{f} + 2 \widehat{f}}{2 \sqrt{\delta}} + \frac{\beta \cdot f \cdot \widehat{f}}{\sqrt{\delta}} \Big| \end{aligned}$$

... Magnettia Ahrineo, egar derivativa

$$\frac{a_1(2r+6)b\left(\frac{3r-3}{\sqrt{2r}}\right)}{a_1^22} = \frac{a_1^2+2\sqrt{2}}{a_2^22}$$

182. Go.

Using the property of the pro

Hilby  $G \to_{\mathbb{R}} S$  (nearon

$$I = \int_{V} \left( \frac{\partial Q_{N}}{\partial x} + \frac{\partial Q_{N}}{\partial y} \right)$$

$$= \int_{V} \left( \frac{\partial Q_{N}}{\partial y} + \frac{\partial P_{N}}{\partial y} \right) dx dy.$$

$$= \int_{V} \left( \frac{\partial Q_{N}}{\partial y} + \frac{\partial P_{N}}{\partial y} \right) dx dy.$$

-

$$\begin{aligned} & p = 2x + 3y^2 \\ & p = 2y + 2y^2 \\ & \frac{2y}{dx} = -6y^2 \\ & \frac{2y}{dy} = -6y^2 \\ & \frac{$$

$$= \iint_{\mathbb{R}^{2}} 10 v \operatorname{distr}$$

$$f = 10 \left[ \operatorname{dist} \int_{0}^{2\pi} \int_{0}^{\pi} \left( -\int_{0}^{\pi} \operatorname{dist} (1 - v)^{2} \right) \right]$$

$$I = -\iint_{\Omega} (1 + x_{i}^{(2)}) dx_{i} = 1.6866$$

164 <u>50</u>4.

An aroung to gauge divergence in egyptic

$$\left( \int_{\mathbb{R}^{N}} g(\lambda x) \cdot \overline{x} g(x) \cdot g(x) \right) = \int_{\mathbb{R}^{N}} G(x, \eta, x) \cdot g(x) \cdot g(x) \cdot g(x) \cdot g(x) = 0$$

$$= \frac{1}{2} [0.18 \times \frac{1}{5} \pi] e^{it}$$

$$t = 8 \qquad \qquad 5 \text{ or } t_1$$

$$= \frac{4}{5} \pi N \pm t_2 + 216$$

185, 80,

$$\mathcal{F} \stackrel{\text{softs}}{=} \frac{A_{i}^{i}}{2}$$

If  $x \in A = 0$  or A = A = A

So the required limit is  $\lim_{t\to 0} \frac{\sin(t)}{t} = 1$ 

166. Scl.

$$\lim_{n\to\infty}\frac{n(n-\ell)}{n(n-\ell)}$$

i er yektir Andlasa ikid

For the requires in it is  $\lim_{t\to 0} \frac{d(dt)}{dt} = 1$ 

167 Gu

$$\begin{split} \int \overline{w} v \, dx &= \int_{S} (y^{-1} + \lambda z \overline{w} \cdot v \cdot y \overline{w}) \times \\ &= \int_{S} p x (w - \omega z \overline{w} \cdot v) \cdot x z \overline{\omega} Z \end{split}$$

$$\inf_{\lambda} \mathcal{O}(\mu_{\lambda}(\lambda)) = (\lambda + \lambda)$$

Cover for all a = a,  $\gamma = a^2/2 + 3b^2$ 

$$= 3.47 \cdot 86 \left(\frac{7}{1} - 3.37\right)^{\frac{1}{4}}$$
$$= 3(3 - 7) - 86 \cdot 2$$
$$= 732 - 8 - 728$$

168 Gal.

$$\begin{split} & \frac{1}{2\pi i} \sqrt{\sqrt{x^2 + n} + n^2 \sqrt{x^2 + 1}} \\ & = \frac{\sqrt{x^2 + n} + \sqrt{x^2 + 1}}{\sqrt{x^2 + n^2}} \left( \sqrt{x^2 + n^2} + \sqrt{x^2 + 1} \right) \\ & = \frac{1}{2\pi i} \sqrt{\frac{x^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{x^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \\ & = \frac{1}{2\pi i} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}} \sqrt{\frac{n^2 + n + x^2}{\sqrt{q^2 + n^2}}}$$

169. (4)

$$\lim_{x \to 0} \frac{\ln(1 + 4x)}{e^{xx}} = 0 \text{ for each}$$

$$= \frac{1}{1 + \frac{1}{2} + \frac{1}{2}} = \frac{e}{2}$$

470. (6)

$$\int_{0}^{\infty} \frac{\sqrt{x^2 + y - 1} - x - x}{\sqrt{x^2 + y - 1} - x} \frac{\left[\sqrt{x^2 + y - 1} - x\right] \left[\sqrt{x^2 + y - 1} + x\right]}{\sqrt{x^2 + y - 1}} \frac{\sqrt{x^2 + y - 1}}{\sqrt{x^2 + y - 1}} \frac{x - y}{\sqrt{x^2 $

$$\lim_{x \to \infty} \frac{1}{\frac{1}{x^{1+1}} + \frac{1}{x^{1+1}} = 1} = \frac{1}{x^{1+1}} + \frac{1}{x^{1+1}}$$

1/1 (0)

$$\begin{aligned} & 2 \left( \frac{1}{2} \max_{i,j} \frac{2 i \sqrt{1 + i \sqrt{1 + j}}}{\sqrt{1 + i \sqrt{1 + j}}} \right) \frac{1}{2} = 0 \\ & = \left( \frac{1}{2} \max_{i,j} 2 \max_{i,j} 2 \max_{i,j} 2 \right) \frac{1}{2} = 0 \end{aligned}$$

$$\lim_{|x| \to \infty} 2^{\frac{N(x)}{2}} e^{\frac{1}{N(x)} \left( \frac{1}{N(x)} + \frac{1}{N(x)} \right)} = 0.$$

$$\beta(\mathbf{x}_{ij},\mathbf{x}_{ij},\mathbf{y}_{ij}) = 0$$
 and  $\beta(\mathbf{y}_{ij},\mathbf{y}_{ij}) = 0$ .

$$\lim_{t\to 0}\frac{\operatorname{reg}\left(\frac{2t}{2}\right)}{\operatorname{reg}\left(\frac{2t}{2}\right)}\geq \lim_{t\to 0}\frac{\operatorname{d}\left(\frac{2t}{2}\right)}{\operatorname{d}^2\left(\frac{2t}{2}\right)}$$

$$\lim_{n \to \infty} \left| \frac{q^{n-n}}{1 - q^{n-n}} - \frac{m}{1 - q^{n-n}} \right|$$

would depends of the

4.75 CH

 $p_{\rm c} = p_{\rm c} / p_{\rm c}$  in the transition  $p_{\rm c} = p_{\rm c} / p_{\rm c}$  is the first disconnection of the property of t

 $G: \Gamma(\{e\})$  a conductive et  $z=z_0$  thus, the eyest may not be to break at  $r=r_0$ 

 $P_{\rm e}$  highlighting an include  $i=r_{\rm p}$  then this class

 $\gamma_2$  if  $\gamma_1$  or  $\gamma_2$  if  $\gamma_3$  or  $\gamma_4$ 

عداج وزام

.3 since

PRINCE COME (Mitterness

1/3, (2)

$$f(t) = \frac{a^2 - A_0}{a^2 + A_0} \stackrel{a}{\sim} \text{is not continues.}$$

**-101** 

$$Y^2 = \cup_{i=1}^n \quad \triangle = \Omega$$

$$(r + 1)(r - 1) = 0$$
.

174 (6)

Fig. - Spotteris telepy under  $E(x) = f(x) \in \mathbb{R}$  and  $E(x) = f(x) \in \mathbb{R}$ 

ราก (ค.ศ. 1975) ค.ศ. (ค.ศ. 1975) อ.ศ. (สีที่) สิบริยาษยยยยยยาก เลย (ก

 $5.57 = 3.4 \times 3.0 = 1.4 \times 3$ 

 $\dots$   $(\infty)$  5 bY1+8x mg (graph 0)

175, 35

0.87, -0.43  $\approx degree 10$ 

$$\Delta x 1 = e^2 g^{-10} + 2g x^2 \dots = e^2 g + g_1$$

$$\dot{\beta}(x) = \partial_x x^{-2} + \delta x^{-2}$$
 ,  $\partial_x x + \partial_x$ 

$$f(A + C - B) = f(B + C - A - B)^{3}$$

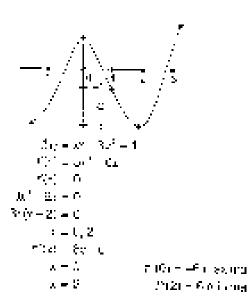
Note 
$$f_i(s) = f_i(s) + (2\pi_{ij})^2 + 2\pi_{ij}(s)$$
.

$$(d, x) = f(x, r) + f(x, r) + f(x, r)^2 + f(x, r)^2 = -1 + g(x, r)^2 + f(x, r)^2 + g(x, r$$

$$g(0) - 2(1x) = 20a_{12}x^24$$

Cheenly segment on (g(z) + g(z), g(z))

17E. (b)



177 Gel.

٦,

$$|\hat{x}(z)| = 2r^2 - x^4 - C$$
  $p_1 = \frac{1}{2}(z) = 3r^2 - 4r^2$ 

er minimo Andreasing

$$r(x) = 6$$

$$-3e^{2x} - 3e^{2x} = 0$$

$$(2x^2)(2+2x) = 0$$

$$\hat{\mathbf{r}}_{1,k}^{(i)}(\underline{\mathbf{r}}_{k}) = \underline{\mathbf{r}}_{k}^{(i)} - \mathbf{r}_{k}^{(i)}(\underline{\mathbf{r}}_{k}^{(i)})$$

$$|\mathbf{f}_{i}| = \mathbf{f}_{i} \cdot \mathbf{f}_{i} \cdot \mathbf{f}_{i} \cdot \mathbf{f}_{i} \cdot \mathbf{f}_{i} = \mathbf{f}_{i}$$

$$10^{n} \cdot \lambda = \frac{9}{2} - \frac{2^{n} \binom{9}{2}}{\binom{9}{2}} \cdot 29 \cdot 29 = (0 < 3) \text{making}$$

8. 
$$r = -1 - [f_{\pi}(t) + 2] = -6 - [f_{\pi}(t)]$$

Alone 1. In the second and the seco

178, Sal.

$$\tau(x) = x^2 + 3x^2 + 2y = 1/3$$

$$f'(a) = 0.61 - 55 = 0.5$$

$$\hat{f}(x) = \text{Unonstationary in } m_{\epsilon}$$

Here there points to a fig. 
$$\frac{1}{24}$$

only 
$$[-\frac{1}{65}] \operatorname{lexiq}[1, 2]$$

$$\begin{bmatrix} -\frac{1}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{2}{2\sqrt{3}} \end{bmatrix} = -\frac{2}{2\sqrt{3}}$$

Marinni kalubisid.

179. (d)

$$f'(x) = 0$$

$$\pm i = 2$$
 (stallandly) with  $j$ 

$$||f'(x)|| \leq 2^{-n}(1)$$

$$\Rightarrow -1(x) \times \text{ transform so } x = 0$$

hopationalização (Galla 2 (auxilian))

480. (b)

The quadratic approximation of  $f_0$  at the set x = 0 in

$$f(x) = f(0) + \frac{1}{p}f'(0) + \frac{\sqrt{2}}{2!}f''(0)$$
$$= \frac{1}{2!} \{-x(0) + x(0) + \frac{\sqrt{2}}{2!}(-3)\}$$
$$= -x(0) + x(0) + \frac{\sqrt{2}}{2!}(-3)$$

181. (d)  

$$G_{1}(a) = G_{2}(a)$$

$$G_{2}(a) = G_{2}(a)$$

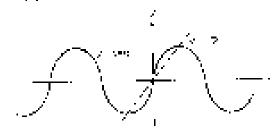
$$G_{3}(a) = G_{3}(a)$$

$$G_{4}(a) = G_{4}(a)$$

$$G_{4}(a) =$$

$$\lim_{t \to 0} 0 = \frac{m_1 - m_2}{\left| \frac{m_1 - m_2}{m_1 - m_2} \right|} = \frac{m_1 - m_2 - m_2}{\left| \frac{m_1 - m_2 - m_2}{m_1 - m_2} \right|} = \frac{m_1 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_1 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2} \right|} = \frac{m_2 - m_2}{\left| \frac{m_2 - m_2}{m_2 - m_2}$$

# (92. (c))



Sense 8 coluitors

# 183. Bol.

$$\begin{split} \int_{0}^{\infty} dx \, dx &= \int_{0}^{\infty} dx + F(x) \\ &= \int_{0}^{\infty} \frac{dx}{dx} + \frac{\sqrt{D}}{2} dx dy \\ &= \int_{0}^{\infty} \frac{dx}{dx} + \frac{\sqrt{D}}{2} dx dy \\ &= \int_{0}^{\infty} (2 + \sqrt{C} dx) $

$$y = mx + x$$
  
 $0.435 \, \text{m}_0^2 \pm 0.00 \, (0.0)$   
 $0 = 0.4 \, \text{m}_0^2 + x + 5$   
 $y = 0.5$   
 $0.4 \, \text{dog} \, \text{through} \, (2.3)$ 

$$g_{3}$$
 along through  $(2,3)$   
 $g_{3} = 2g$ 

185 Ga.

$$\int \frac{1}{\sqrt{1-x}} dx = 2 \frac{1}{4} \frac{4}{2\sqrt{1-x}} dx$$
$$21\sqrt{2} - \frac{1}{2} \frac{1}{4} = -2(0-x) = 2$$

186. (p)

$$\int_{0}^{\infty} \frac{1}{1 - \frac{1}{2} e^{2}} dx = \frac{1}{2} (40^{\circ} e^{2})^{\circ}$$

$$= V(F + \omega + 2\pi)^{\circ} C = \frac{\pi}{2}$$

$$g(g) \circ (3 g(x) = \frac{1}{g'(x)}.$$

$$= \left( \frac{2\pi \gamma^2}{2\pi} - \int_{\mathbb{R}^2} \frac{1}{2\pi \gamma^2} \pi^{1/2} \right)$$

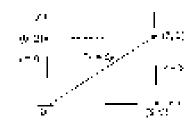
= 
$$\lim_{n \to \infty} z_{j,n}^{(n)}$$
  
=  $\lim_{n \to \infty} \lim_{n \to \infty} |z| = \infty, 2(x)$ 

$$= \int_{\mathbb{R}} e^{-ix} \frac{dF(x)}{x} dx = 0.17(4)$$
 (Bs.og.) Hintler of Lagrand Analogoid. Dut  $x = 0$ 

$$2^{\frac{1}{2}} \int_{0}^{\infty} \frac{S d\lambda}{\lambda} dx = cot \left[ \left( \frac{\lambda}{\lambda} \right) - \frac{\pi}{\lambda} \right]$$

$$= \frac{1}{2} dx - \frac{1}{2} \frac{S d\lambda}{\lambda} dx = 0$$

iev. Bol



189. Sw.

$$V = \frac{\sqrt{1}}{8} \times 1000 \text{ Mpc s} \text{ ppc s}$$

$$\frac{a^{2}}{6} = 6$$

$$\Rightarrow -a^{2} + 2.5 \text{ or a } y = 0$$

$$\therefore \text{ Required a walls } \frac{2}{2x^{2} + 6} \left( 3 - \frac{x^{2}}{9} \right) (6)$$

$$= 2 \left[ \frac{x^{2}}{6} \right] 3 - \frac{x^{2}}{6} \left[ \cos \left( x - \frac{x^{2}}{9} \right) \cos \cos x \right] (6)$$

$$= \frac{1}{2} \left[ \frac{x^{2}}{6} + \frac{x^{2}}{9} \right] \left[ \frac{x^{2}}{6} + \frac{x^{2}}{9} + 85.90 \text{ sq.units} \right]$$

189 Gal.

$$\begin{aligned} & \frac{2\pi}{3} & = \frac{\pi}{3} \frac{3\pi}{9} \\ & + \frac{\pi}{3} \frac{\pi}{9} \\ & + \frac{\pi}{3} \frac{\pi}{9} \\ & = \frac{\pi}{3} \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 1) (\pi/2\pi 6) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) + 1) (\pi/2\pi 6) \right) \right) \\ & = \frac{\pi}{2} \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) (\pi/2\pi 6) \right) \\ & = \frac{\pi}{9} \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) (\pi/2\pi 6) \right) \\ & = \frac{\pi}{9} \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) (\pi/2\pi 6) \right) \\ & = \frac{\pi}{9} \frac{\pi}{9} \left( (\pi/2\pi 80 + 80 + 80 + 9) (\pi/2\pi 6) \right) \\ & = \frac{\pi}{9} \frac{\pi}{9} \left( (\pi/2\pi 6) (\pi/2\pi 6) + 10 (\pi/2\pi 6) (\pi/2\pi 6) \right) \\ & = \frac{\pi}{9} \frac{\pi}{9} \left( (\pi/2\pi 6) (\pi/2\pi 6) (\pi/2\pi 6) (\pi/2\pi 6) \right) \\ & = \frac{\pi}{9} \frac{\pi}{9} \left( (\pi/2\pi 6) (\pi/2\pi$$

$$\begin{split} & = \frac{1}{2\pi} \int_{0}^{\infty} \frac{f_{0}}{f_{0}} |\cos \theta - \sin \theta(\sin \theta) - \frac{2\pi}{2\pi} \int_{0}^{\pi} S_{0}[\cos \theta] \\ & = -\frac{1}{2\pi} \int_{0}^{\infty} \frac{f_{0}(-1) - \cos \theta}{f_{0}(-1) - \cos \theta} \int_{-\infty}^{\infty} \frac{1}{2\pi} S_{0}[\sin \theta] \\ & = -\frac{1}{2\pi} \int_{0}^{\pi} \frac{d}{f_{0}} (3 - f_{0} - f_{0} - f_{0} - g_{0}) = 0, \quad \text{as } t = 0. \end{split}$$

196. 85.

$$\begin{split} & \int \tau /^2 dx + y^2 \, p(t) \, = \, \left[ \iint_{\mathbb{R}} \frac{d}{dx} dx \, \Big| y \big| + \frac{1}{\sqrt{2}} (\tau y^2) \Big| \, dx \, dx \right] \\ & = \int_{\mathbb{R}^2} (2q y - 2 y y) \, dy \, . \end{split}$$

191. (a)

Aftha to be interest on a managage.

$$(1-3)^{2} + 3.556 \ a + a + 5 + 6.5 \ a + 2 + 6.5 \ a $

$$\Rightarrow$$
  $x = \beta$ ,  $a \times 13 + \lambda \ge \lambda^{2}$ 

theorem and 
$$|\mathbf{x}| = \prod_{i \in \mathcal{A}} \mathbf{x}_i^* \mathbf{o}_{\mathbf{x}_i}$$

$$\begin{split} & = \int_{-\infty}^{\infty} \frac{1}{2\pi} \int_{0}^{2\pi} \frac{1}{2\pi} dx dx \frac{1}{2} dx \\ & = \int_{-\infty}^{\infty} \frac{1}{2\pi} \left[ \frac{1}{2\pi} - \frac{1}{2\pi} \right] \left[ \frac{1}{2\pi} + \frac{1}{2\pi} \right] dx \\ & = \left[ \frac{1}{2\pi} - \frac{1}{2\pi} - \frac{1}{2\pi} \right] = \frac{3\pi}{2\pi} \end{split}$$

192 So

$$\begin{split} \mathbf{E} &= \int_{1}^{0} \int_{0}^{\pi/2} \int_{0}^{4\pi} d^{2}x \, d^{2}y \, d^{$$

193 Ed.

$$V = \sqrt{25\cos n} \cdot \sqrt{25\sin n}$$

$$V = \sqrt{25\cos n} \cdot \sqrt{25\sin n} \cdot \frac{n}{60}$$

$$= \sqrt{25\cos n} \cdot 2\sin n \cdot 25\sin n \cdot \frac{n}{60}$$

$$= \sqrt{25\sin n} \cdot 2\cos n \cdot \frac{n}{60}$$
The unique mass  $\frac{n}{60} = 0$ 

Duktion unweer erokanii di

194. jd\*

We intowheath \$ each purpose shows i

 $1.41 \pm 3.45 \pm 0.$ 

so,  $m_{k}(s)$  (b) in figure an paradoular,  $s: s \mapsto s(s)$  and paradoular.

198 (5)

where 
$$C = 2g^2T + 2e^2y^2 + S$$
  
 $\times 2e^2 = S$ 

 $(y') \in p_{\mathcal{M}}(\mathbf{s})$  is a larger solution.

in factor are purposed by a first).

$$\lambda = 2\pi v^*$$

$$p_{y}=2\Upsilon \gamma$$

MINISTER A STRUCTURE VENEZUE VENEZUE

$$\int_{0}^{\infty}d^{2}x^{2}=\int_{0}^{\infty}\int_{0}^{1}d^{2}x=\int_{0}^{\infty}d^{2}x^{2}=-\int_{0}^{\infty}\int_{0}^{1}d^{2}x^{2}$$

194. **9**.4.

$$\begin{aligned} & \mathcal{F} = (c_1 x_1^2 + 0) t^2 - 2 \sqrt{t} - c_1^2 x^2 \\ & = \int_0^{\infty} \frac{dx}{x^2} + (3x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx \\ & = \int_0^{\infty} \frac{dx}{x^2} + (2x^2 + 2x^2) dx + x^2 + 2dx + x^2 + 2$$

190. (b):

$$\begin{split} f(\phi) &= \frac{1}{2} \left[ f(\phi) \phi + \frac{1}{2} \partial^{-1} \phi \partial^{-1} \phi \right] \\ g(\phi) &= \left[ f(\phi) \phi + \frac{1}{2} \partial^{-1} \phi \partial^{-1} \phi \right] \phi \,, \end{split}$$

$$c(x) = c(x)$$

$$\int f(x)(x) = \int f(x)(x)(x)$$

$$= \frac{d^{-1}}{d^{-1}}(1-x)(1-x)$$

$$= e^{-1}$$

$$= e^{-\frac{1}{2}(x-x)} = e^{-\frac{1}{2}(x-x)}$$

198 So

$$\overline{p} = -\sqrt{1 - x_0}$$

$$y = \frac{1}{x_0} \left( -\frac{y}{x_0} - \frac{y}{x_0} \right)$$

$$= 0 = 0$$

200. dal.

$$y = (y + \lambda)^2 + (y + 1)^2 + (y + 2)^2$$

$$y = -\frac{1}{\delta x}(y + y) + \frac{\delta}{\delta x}(x + \lambda) + \frac{\delta}{\delta x}(y + \lambda)$$

$$= (1 + \lambda)^2 + (1 + \lambda)^2$$

— — — » r Py Cia na prvoger de úleme u

$$\begin{split} \iint_{\mathbb{R}^{d}} f^{2} d\tilde{p} \tilde{p} &= \iint_{\mathbb{R}^{d}} f^{2} d\tilde{p} = \iint_{\mathbb{R}^{d}} 2 d\tilde{p} \\ &= 2 (\cosh \theta) \exp (\sin \theta) f^{2} + 2 (\sin \theta) + 2 (\sin \theta) \\ &= 2 \left[ \frac{1}{2} \pi (\tilde{p}_{1}^{2})^{2} \right] = 220.35 \end{split}$$

201. (3).

$$\lim_{s\to 0} \frac{(1+\delta s)}{s}, \quad \left(\frac{0}{0} \text{min}\right)$$

$$\lim_{s\to 0} \frac{\delta s^2 + \cos s}{s} = 0 + \cos s = 0$$

$$= 0 \quad (1 = -1)$$

202 (01)

$$z = \cos\left(\frac{\kappa x^2}{2}\right), \quad y = \sin\left(\frac{\pi x^2}{2}\right)$$

$$y^2 = y^2 - 1$$

t represents a prible if a 40 wte.

$$g_0 = -\delta \cdot t \in \mathbb{Z}_p^{L}$$

Here we differ the conditions to a particle and the proof of the conditions of the

903. Gd.

By sector deals, as this (c.c.) 
$$f'$$
  $f'$  =  $0$ 

214. Sci.

Nine Million subsect of almost an Silvid sectors

Fig. . As non-zero. Hence  $\mu(\mathbf{A}) = 1$ 

206 Sul.

$$\frac{4}{27 + 67 + 1.45}$$

$$\frac{2}{27 + 1.25} = \frac{135 + 87 + 1.25}{24 + 1.25}$$

$$= \frac{137 + 87 + 1.458 + 1.25 + 1.35}{34 + 1.25 + 1.45 + 1.25}$$

$$= \frac{127 + 87 + 1.45 + 1.25 + 1.25}{34 + 1.25 + 1.25}$$

$$= \frac{-24 + 46 + 1.254}{(15.336(21)(4))} = \frac{1.223}{3.236(21)(4)} = \frac{1.223}{3.236(21)(4)} = 1.457$$

208. Su

x + y = 0 in  $x \neq y$ 

207 Sel.

200. (a)

$$\label{eq:condition} \frac{\zeta(r)}{\zeta(r)} = \frac{1}{r} + \frac{r}{r} $

...  $\mathsf{TOS}(k)$  is some forms for a very

□ et privas le lanction oftere commotature de la elegación mota.

hardara kenimitan ni sika di indesigre 2010

20E Ga

$$J = 2 \iint_{0} x e^{2} dx dx$$

$$= 2 \iint_{0} \frac{1}{x^{2}} \int_{0}^{x} x e^{2} dy dx$$

$$= 2 \iint_{0} \frac{1}{x^{2}} \int_{0}^{x} x e^{2} dy dx$$

$$= 2 \iint_{0} \frac{1}{x^{2}} \int_{0}^{x} dx = 2 \iint_{0}^{x} 2 \int_{0}^{x} dx$$

$$= 2 \iint_{0} \frac{1}{x^{2}} \int_{0}^{x} dx = 2 \iint_{0}^{x} 2 \int_{0}^{x} dx$$

$$= 2 \iint_{0} \left[ \frac{x^{2}}{x} \right]^{2}$$

$$= \frac{2 \iint_{0} \left[ x^{2} + \frac{x^{2}}{x^{2}} \right]^{2}$$

$$= \frac{2 \iint_{0} \left[ x^{2} + \frac{x$$

210. (2)

$$\begin{aligned} f(x) &= \begin{cases} -c^2 & -2+1 \\ (1+2)^2 & -c_2 + 2+1 \end{cases} \\ (1+3) &= \frac{2\pi}{2}, \frac{6(3+3)\pi}{2+1} \\ &= \frac{2\pi}{2}, \frac{6(3+3)}{3+1} = \frac{\pi}{2}, \frac{2\pi^2}{3+1} = \pi \\ (1+3) &= \frac{\pi}{2}, \frac{6(3)+\pi}{3+1} = \frac{\pi}{2}, \frac{2\pi^2}{3+1} = \pi \\ (1+3) &= \frac{\pi}{2}, \frac{6(3+3)^2+3\pi}{3+1} = 0 + 3 \end{cases} \\ &= \frac{\pi}{2}, \frac{6(3+3)^2+3\pi}{3+1} = 1 + \frac{2\pi}{2} + 3 . \end{aligned}$$

$$= \frac{\pi}{2}, \frac{6(3+3)^2+3\pi}{3+1} = 1 + \frac{2\pi}{2} + 3 .$$

$$= \frac{\pi}{2}, \frac{6(3+3)^2+3\pi}{3+1} = 1 + \frac{2\pi}{2} + 3 .$$

$$= \frac{\pi}{2}, \frac{\pi}{3+1} = \frac{\pi}{3} + \frac{\pi}{$$

 $x = \frac{1}{2} x^2 \times x^2 + c$  (i.e. value of x = 1

# 2.1. Sol.

nith in the langer cowood.

$$g_{y1}=\phi(y+\alpha)+\alpha_{y}=0.$$

$$\alpha \omega + \Delta_i \nabla + \alpha_i \omega + \omega_i = 0 : \exists i \in$$

$$1: x |0| + \frac{||x_2 - b|| p_2 - c_1 p_2^2|}{||x_2 - b||^2 + c_1^2 \sqrt{x_1^2 - b_1^2 + c_2^2}}$$

$$\begin{array}{lll} z_1 & & z_1 = 1 & z_2 = 1 & z_3 = 0 \\ z_2 = z & z_2 = -1 & z_3 = 2 & z_3 = 0 \end{array}$$

$$n' = 1$$
  $n = 1$   $n' = 2$   $n' = 0$ 

$$y = 0$$

$$= \frac{(1)(2 + (1)(-1) - (1)(2))}{\sqrt{(1)^2 + (1)^2 + (2)^2 + (-1)^2 - (2)^2}}$$

$$= \frac{2 - 1 \cdot 2}{\sqrt{2} \cdot \sqrt{2}} = \frac{3}{3\sqrt{2}} \cdot \frac{1}{\sqrt{2}}$$

$$= 0 - 320^2 \cdot \frac{1 \cdot 1}{\sqrt{2}} = 53 \cdot 75^2$$

# 212. Sol.

$$||\widetilde{a}x_i - \frac{1}{2}s(x^2 - \omega)|| = ||\widetilde{a}(x^2 - \omega)||$$

$$f''(x) = \frac{4}{3}||\widetilde{a}x^2 - \widetilde{a}|| + s^2 - 1$$

$$f''(x) = s^2 - 1 - 5$$

$$\Rightarrow x = \pm 1$$

$$C(y) = 2y$$

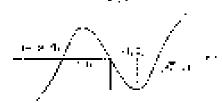
Approximation 
$$(2.771) = 7 = 0$$
  $\longrightarrow$  minimation

$$A(|z| + |f_{z}^{*}(f)|) = 2 < 0 \implies \text{max} \in \mathbb{R}$$

Win mum value of  $\partial_i \dot{\phi}$  in [-100, 100]/2 given by

Manhort (C. 200), 5 (00), 5 (10)

) grow the ordinal to the occurs source in 100. Assugated the function will be the



270 (c)

$$\begin{aligned} &\operatorname{todin}(I_1 = \prod_{i=1, \dots, N}^{n-1} \frac{1}{(n-N)^i} dN) \\ &= \frac{1}{N} \int_{\Omega_1} \frac{2\pi}{(n+N)^i} - \frac{1}{(n+N)^i} dN |dY| dY \end{aligned}$$

and integral

$$\begin{aligned} \mathbf{r} &= \left[\frac{\left(\frac{1}{2}\mathbf{x} + \mathbf{y}\right)}{\left(\frac{1}{2}\left(\mathbf{x} + \mathbf{y}\right)\right)} \frac{d\mathbf{x}}{d\mathbf{x}^2}\right] \\ &= \frac{1}{\left(\frac{1}{2}\left(\mathbf{x} + \mathbf{y}\right)^2 + \left(\mathbf{x} + \mathbf{y}\right)^2\right)^2} \frac{d\mathbf{y}}{d\mathbf{y}} \\ &= \frac{\left(\frac{1}{2}\mathbf{x} + \mathbf{y}\right) - \left(\frac{1}{2}\mathbf{x} + \mathbf{y}\right) \cdot \left(\frac{1}{2}\mathbf{y}\right)}{\left(\frac{1}{2}\mathbf{x} + \mathbf{y}\right)^2} \frac{d\mathbf{y}}{d\mathbf{y}} \\ &= \frac{1}{2}\frac{1}{2}\frac{1}{2}\left(\mathbf{y} + \mathbf{y}\right)^2 + \left(\frac{1}{2}\mathbf{y} + \mathbf{y}\right)^2 \cdot \left(\frac{1}{2}\mathbf{y} + \mathbf{y}\right)^2 + \left(\frac{1}{2}\mathbf{y} + \mathbf{y}\right)^2 \cdot \left(\frac{1}{2}\mathbf{y} + \mathbf{y}\right)^2 + \left(\frac{1}{2}\mathbf{y} + \mathbf{y}\right)^2 \cdot \left(\frac{1}{2}\mathbf{y} + \mathbf$$

Option (g) is conert

214 3hd

$$\varphi = 2(\sqrt{3}y + k_0 Z) + 2\sqrt{(k_0 y + 2Z) + \tilde{\partial}_2(k_1 y + 2Z)}$$

 $\sqrt{s}_{\rm e} = 0$  ) in Armona (

$$\begin{aligned} |\nabla y|^2 &= \frac{2\pi}{3} \frac{3y}{4y} \frac{3y}{3y} \\ &= \frac{3}{3y} \frac{4}{4y} \frac{3y}{3y} \frac{3y}{3y} \\ &\left[3y + r_0 - r_0 x - 8x - 8x - (8y) + x\right] \right] \\ &= 2\left[\frac{\pi}{3y} \left[(8y + 1) x\right] \left[ + \frac{3}{3x} \left(3y + 2x\right) \right] \end{aligned}$$

$$= S_1 \left( \frac{2}{4\pi} \left[ -(16/2) \right] + 1 - \frac{3}{4\pi} \left( 2\pi (-3/2) \right) \right]$$

$$\frac{3}{5} \frac{3}{||\partial x||^{2}} (x_{y} x + 2y_{y}) \cdot \frac{1}{5} (x_{y} - y_{y}) \frac{1}{4}$$

$$(10 + 2y_{y} - 2y_{y}) \cdot \frac{1}{5} (2y_{y} - y_{y})$$

$$\begin{split} & a_i^{A_i} \, b_j + 2 - \hat{s}_i \, [\hat{s}_i] \, || \hat{s}_i [\hat{s}_i - \hat{s}_j] = 0 \\ & \Rightarrow \qquad b_j = 2, \ \hat{s}_i + 0, \ \hat{s}_i = \hat{s}_i \\ & : \qquad b_j = 0, \ \hat{s}_i = 0, \ \hat{s}_j = 2 \end{split}$$

$$-\mathbf{E}_{\mathbf{j}} = \mathbf{U}_{\mathbf{j}} \hat{\mathbf{x}}_{\mathbf{j}} = 0, \hat{\mathbf{x}}_{\mathbf{j}} = 2.$$

Z15, 35

Tie catalon of the ine AG is

$$\frac{y-3}{4-3} = \frac{9-3}{1+2} - \frac{3}{1-1} - \frac{9-39}{309}$$

$$y-45 = y-40, \quad y-40 = -9$$

$$y-40, \quad y-30 = -9$$

$$y-300 = -9$$

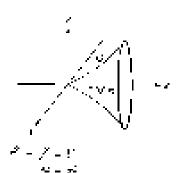
$$y-300 = -9$$

$$\beta = \left[ 2(-2\pi) + (4\pi) + 2(-1)(-2)(-2)(-2) \right] - 2200$$

$$\begin{aligned} & = \int_{\Omega} (-1)^{2} (1 - 2) + 2 (1 - 2) - 13 (1.2) \\ & = \int_{\Omega} (-1)^{2} (1 + 2)^{2} (1 - 2) \\ & = \left[ -1 + 2 (1 - 2) \right] = -1 + 2 (1 - 2) \end{aligned}$$

2 0 (e)

217 Sal



Horo (expertion is accust a peta-

$$\text{ region } \mathbf{A} = \left\{\mathbf{a}(\mathbf{A}^{\mathsf{T}})^{\mathsf{T}}\mathbf{A}^{\mathsf{T}}\right\}$$

There MU is not excluding all some a which is upon to

$$\lim_{n \to \infty} \frac{1}{n} \frac{\partial^2 u}{\partial x^2} = \frac{1}{n$$

219, (6)

$$C\left[\frac{1}{2}\right] = \sqrt{\varepsilon}$$
 ... ...

$$\int_{0}^{1} S(s)ds = \frac{2\pi}{2}$$
 (1.8)

New ≥5 nego tanna Albes 5

$$f(s) = Post\left(\frac{\pi s}{s}\right)^{\frac{1}{2}}$$

$$f\left(\frac{\pi}{s}\right) = Post\left(\frac{\pi}{s}\right) \times \frac{\pi}{s} - \sqrt{s}$$

$$e^{s} = \frac{1}{s}$$

$$= \qquad \qquad \mathbf{F} = \frac{\mathbf{I}}{\pi}$$

We 
$$\int_{-1}^{\infty} ds ds = -B S n^{\frac{2N}{N}} + S \left\{ ds \right\}$$

-using 
$$m_0 = \frac{1}{2\pi} \exp(i\beta t)$$
  
$$\int_0^t f(x) dx = \int_0^t f(x) \left(\frac{dx}{dx}\right) dx + \int_0^t f(x) dx$$

$$=\frac{4}{\pi} \lambda + \frac{9 \ln \left(\frac{x^2}{2}\right)}{\frac{g}{2}} + 5 \pi = \frac{g}{g^2} \cos \left(\frac{m}{p}\right) - 6 x$$

Tulli girmii Diara

$$\begin{split} & \int\limits_{0}^{\infty} (\partial_{t} \partial x) = \frac{g}{\pi^{\frac{1}{2}}} \left( \cos \frac{x}{2} + \cos(0) \right) \cdot S(1 - 3) = \frac{2^{\frac{1}{2}}}{\pi} \\ & + \frac{g}{\pi^{\frac{1}{2}}} (3 + 2 + 2) = \frac{3\pi}{\pi} \end{split}$$

Put 
$$B = \frac{4}{5}$$
 and  $x \mapsto 3a = 9$   
 $5 = 0$ 

Sign 
$$B = \frac{4}{3}$$
 and  $B = 0$  is shewing

**219**. (a)

$$\frac{1}{e^2} \frac{y^2 - 2x^2 - 1}{e^2 - 3y^2 - 2} = \frac{1 - 2x}{1 - 2x - 2}$$
= 000 percent

Since 
$$\frac{1}{2}$$
 is considered as  $\frac{(a^{\frac{6}{3}} - 0)^{\frac{1}{3}}}{(a^{\frac{1}{3}} - 0)}$   
=  $\frac{7}{2}$   $\frac{\pi}{6}$  =  $\frac{2}{2}$  -1

**220. (c)** 

$$w=dx\cdot z$$

Barylan in

$$\frac{d\sigma}{dt} = \frac{dW}{dt} \sqrt{\frac{2h}{2t}} + \frac{hW}{dt} \sqrt{\frac{2h}{2t}}$$

221 Bol.

$$\begin{aligned} y &= (x^{\frac{3}{2}} + 2y^{\frac{3}{2}}) \cdot Z^{\frac{3}{2}} \\ y &= \left[ \frac{3}{2y} \left( + \frac{3}{2y^{\frac{3}{2}}} \right) \frac{3}{4y^{\frac{3}{2}}} y^{\frac{3}{2}}, \ y^{\frac{3}{2}} \right] + \frac{3y^{\frac{3}{2}}}{2y^{\frac{3}{2}}} \\ &+ (x + 2y^{\frac{3}{2}} + 4z^{\frac{3}{2}}) \end{aligned}$$

45 (1 P 3)

$$\psi(r + 2 + 5)^{2}\psi^{2} + 4(2)^{2}$$
  
= 34

222 (e)

$$B = 0 = \frac{\partial f}{\partial x} = 0.5^{-1}$$
  
 $1 = 0.5 \times 1$ 

220. (a)

$$\frac{d\sigma}{dt-r}=o($$

$$y = \left(\frac{1}{2} \int_{\mathbb{R}^2} d^3 y \, dy - \left[\frac{1}{2} \frac{y}{2}\right]^{-1/2} + \frac{\pi^2}{2^2}\right)$$

294. (DI

∯смон <sup>1</sup> ныг ожу.

$$\mathcal{L} = \mathbb{R} \mathbb{Q} := \mathbb{R} \mathbb{Q} \mathbb{P}$$

$$\frac{d\omega}{dt} = 00 - 1201 \pm 0$$
  
12.0 S to 180 minutes

$$\frac{g^2N}{M} = -90 \times 0.09$$
aana)

ាស់ទទួលប្រធាន មានការស្រីពី

$$S_{\rm rec} = 60 \times 0.5 + 50 \times (0.5)^2 \approx 15 \, {\rm km}$$

225. 5에

$$\frac{1}{\sqrt{2}} \frac{\ln x}{y^2 + x} = -(6.56 \text{ yrg L. loop(in now)})$$
$$\frac{M x^2 x}{2 + 3 x^2 + x} = \frac{86x^2 C}{10 + x} = \frac{1}{1 + 3}$$

225, 197

$$\mathcal{I}_{\mathcal{D}}(=\frac{\sqrt{2}}{2}\cdot \chi)$$

We will not be fire for an excitable.

$$f(z) = \frac{3x^2}{5} - 1 = x^2 - 1$$

 $con = \frac{m}{2}(x) = 2x.$ 

to determine militar in restate of ci-

$$g_{\rm B} (h(g) = \pi^2 + 1 + 0$$
 gives  $g \in [1, m]^2$ 

The  $\epsilon$  - 1 with Princip 3 which begins in the  $\epsilon$  . As the Theorem 200 exists  $\delta$  (  $\epsilon$  =  $\delta$ ).

Altitive question can be allowed by putting, order values of vi

207 (a)

$$\begin{split} \int_{0}^{4\pi} \frac{\partial}{\partial t} & \frac{\partial}{\partial t} \frac{\partial \theta}{\partial t} \frac{\partial \theta}{\partial t} \frac{\partial}{\partial t} \frac{\partial \theta \partial^{2} \partial}{\partial t} + \frac{\partial^{2} \partial}{\partial t} \frac{\partial^{2} \partial}{\partial t} \\ & = 4 \frac{\partial^{2} \partial}{\partial t} \frac{\partial \theta \partial^{2} \partial}{\partial t} + \ln^{2} \partial t \frac{\partial^{2} \partial}{\partial t} \frac{\partial}{\partial t} \frac{\partial \partial \theta \partial^{2} \partial}{\partial t} \frac{\partial \theta}{\partial t} \frac{\partial \theta}{\partial t} \\ & = \frac{\partial^{2} \partial}{\partial t} \frac{\partial}{\partial t} \frac{\partial^{2} \partial}{\partial t} \frac{\partial}{\partial t} \frac{\partial^{2} \partial}{\partial t} \frac{\partial}{\partial t}$$

Let, 
$$\frac{600}{500^{2}}$$
,  $\frac{600}{500^{2}}$ ,  $\frac{600}$ 

# Differential Equations

# 3.1 Introduction

Directorial equations and for content or projection in without for since many of the engage consequent. where the first conductor physical q st it is a sequence alternatically in to a t and s' -upproperty constitution.

In a fraction form a given up fixed proportion to some length of representation, position modeling. This  ${f x}$ the Bally is the district form of the engineer,  ${\mathbb N}$  yelds to compute the engineering the engineering composition as a significant contract of the engineering of the engineering composition and the en o dillarent af equations providen ar am denie e similorenta, conciliona, en cilinea est idle appeal in this chapter era abali da ra i leveligi grafforata abudi e alem egib ji giliyon by sedo ya standa di makini y

# 3.2 Differential Equations of First Order

# 3.2.1 Definitions

3.65  $\pm 4.64$  equation is an equation of 6.65 by see our season and terrorization at this is 6.16  $\mu_{
m co}$  ,  $\mu_{
m co}$ The Se Newmard allowing level of either all against as

$$(2(1-e^2r)^2+y^2r)/y=0$$

$$(x) = \frac{e^{x^2}x}{2e^2} - u^2x = 0.$$

$$(\hat{\beta} - \gamma = \gamma \frac{\partial y}{\partial x} - \frac{y^2}{\partial y^2}$$

$$|\Sigma_{i}| = \left(\frac{d\sigma}{dx}\right)^{1/2} = c \frac{\sigma^{2} c}{\sigma x^{2}}$$

$$\langle \phi \rangle = \frac{\partial \phi}{\partial t} + i \partial y = \operatorname{dec}(\phi) \partial \frac{\partial \phi}{\partial t} + \operatorname{d} x = 2 \phi \operatorname{not} \qquad \qquad \langle 1 \rangle = e^2 \frac{\partial \phi}{\partial x} + y \frac{\partial \phi}{\partial x} + y \frac{\partial \phi}{\partial x} = 2 g$$

$$\mathcal{D}_{i} = e^{it} \frac{\partial \omega}{\partial u} + \mu \frac{\partial \omega}{\partial u} = 2 \chi$$

$$\langle \mathbf{u} \mathbf{i} - \frac{\mathbf{a}^2 \mathbf{y}}{\pi^2} - \mathbf{y}^2 \frac{\mathbf{a}^2 \mathbf{y}}{\delta \mathbf{x}^2}$$

An ordinary differential equations is from the formulating of larger d coefficients who happens to a sing a lone percent variable. This the  $ilde{\pi}$  patrons (acts (a) metal of silving the residuest, also strong a system of ordinary silf—— tialleque; onc

A partial differential angulation is both the period of the dependent variables in  $\mathcal M$  and  $\mathcal M$ differential mellicia Biyan responte wy of Jian III ne egun ens (i) an IV (i a a na light (illerent of esuccenci

The order of a differential equation is the independence integral and additionance  $a_{ij}$  in . The degree of  $a_{ij}$ (Herence) constants it eldegred distoin phosperies tve go and compos, alla modes) infantina a reen expressed The figure free commod capacity insofter published the configuration configuration and published by the configuration of the configurat

For a from the examples as  $\epsilon_{\rm tot}$ 

- io), lie d'il e l'istoroprano trai segree
- (b) Halot in the easily programs that some A-

(3) First 35 (Fig. ) 
$$\frac{\partial \mathcal{V}}{\partial z} = z \left( \frac{\partial \mathcal{V}}{\partial z} \right)^2 + v^2 \cdot 8 \text{ of the first order sum of sense of equations}$$

$$|\phi\rangle \propto \exp(-\sin\theta) \operatorname{red}(\cos\theta) \approx \sin\theta \exp(-\left(\frac{|\phi|^2}{\sqrt{\epsilon_0}}\right)^2 + e^2\left(\frac{a^2}{\sqrt{\epsilon_0}}\right)^2)$$

 $_{\rm ph}$  . Such the region displayed since the 0.000 to

# 3.2.2 Solution of a Differential Equation

As a then promoted a jet is to matching equations a staffed college the m of the whole staff is a function of the matching staff.

$$\frac{e^{-\frac{1}{2}}}{e^{-\frac{1}{2}}}$$

$$\frac{\partial V}{\partial x} = 0.5 \tag{3}$$

The garders Ar committee solution of a little of the graduative distribution in the x and x and x are the configuration of x and y are y are y and y are y

 $g_{\mathrm{B}}$  ,  $g_{\mathrm{B}}$  in the general solution of kielength order on eigenvalue to G . Grew G is well at the G of G by G is G and

A particular soft can be that which by  $x \in \mathbb{R}^4$  district on the general volume by  $y \in \mathbb{R}^4$  and calculate the first orbitally up the x

 $\phi$  and  $\phi$  is the second property of the second content of the second second second  $\phi$  and  $\phi$   $\phi$  +4.

A critical to  $\omega_1(s)$  in the sometimes have an antiform source which compares collaborations. Figure reliable to  $\omega_2(s)$  is an invariant of source  $\omega_2(s)$  in the following the solution of source  $\omega_2(s)$  in the following the solution and could be an affective process where  $\omega_2(s)$  and results  $\omega_2(s)$ .

# 3.7.3 Equations of the First Order and First Degree

This is present one analyticaty with outer equations? hyperent. We distinguished intervending the warms obtained in a part of the application being systemal consistents.

- $\gamma = \sum_{i} p_i r(x) \phi_i w_i r(x) \phi_i = \phi_i (y) \phi_i w_i r(x)$
- y Har agarous equations
- PAN ASJOTOPS.
- $\alpha = \Gamma_{\rm MM} \cdot 2\eta$  (there.
  - $_{
    m 100}$  ) and the control of the second strong the result of the second strong cally

# 323.) Veriebles Separable

By non-exception two destroyments and the forementation of some office and all effections of years decreased the property of the forest of the section of a set of equation  $\lambda$ . For  $a_1 = b$ , then

and with the second 
$$R_{\rm S}(s) = 1$$
 and the results of the

# Example II.

$$g_{\alpha\beta} v = \frac{\partial h}{\partial x} = \alpha v^{\alpha} + \lambda^{\alpha} v^{\alpha}$$

Solution:

for various alignment 
$$\frac{29}{26} = -87 m + 87$$

$$V = -2 A \log \left( (w + A) \underline{\omega}_{0} \right)$$

Programs in the conjugate 
$$\int d^2x \, dx = \int dx \, dx + \partial x \, dx$$

$$(\omega_1) = 0.04 \frac{\Omega}{3} \star 0$$

$$\{\psi : \psi = (\lambda x)^{-1/2} \psi = 0\}$$

MOTE .

In the encycle in questions in the linear conservation and several constraint and the linear public properties and descriptions.

Initial value problem: A supercrite: eight on appoint with eight by conground activation (all value problem: A supercrite: eight appoint with eight became the result of the formatting of the control of the description of the value of the highest eight and the problem of the control of th

Example 2.

$$O(2r) = (r - p - 2)^{n} + (qq) - q$$

Salutinn:

$$\frac{1}{2} \operatorname{diag}(x) = \nabla + 1 + 1 + \gamma + \frac{1}{2} \operatorname{qua}(\frac{dy}{dx}) = \frac{dy}{dx} $

A line of which plants a becomes 
$$\frac{df}{dx} = (\pm p^2)_{\rm off} \frac{df}{dx} = (\pm p^2)_{\rm off}$$

Hoggering and its declined gas 
$$\int \frac{dt}{dt} dt = \int dt + dt$$

$$f(x) = f(x) + f(x)$$

$$x + y - 1 = \ln \pi (x + y)$$

Inner the set is  $(p_{i,j}-p_{i,j})=p_{i,j}/p_{i,j}=p_{i,j}/p_{i,j}$ 

**Mode:** Locations of the form  $\frac{\partial y}{\partial x} = \partial_t a x + \partial_t y + \partial_t y$  can be included by Tip Warrance because the form by x = a x + b = 1.

333.7 Homogeneous Equations

Have general constants and the form 
$$\frac{\partial x}{\partial x} = \frac{\partial x}{\partial x} D$$

where the  $\beta$  are plaints  $\beta$  in expensions that the self-to search deposition why

Homogeneous Function: An expression of the root  $v(x) + (xy)^{-1}(x) + (xy)^{-1}(x) + \dots + (xy)^{-1}(x)^{-1}(x)$  by  $v(x) + (xy) + (xy)^{-1}(x) {-1}(x) {-1}(x) + (xy)^{-1}(x)^{-1}(x)^{-1}(x) + (xy)^{-1}(x)^{-1}($ 

The graph content  $g_{ij}$   $g_i$  was the composition expressed in  $J \in \mathbb{N}$  and  $\mathbb{N}_{J^{-1}}$  is the J of the magnetic content of the J and  $g_i$  connections J. See  $(g_i g_i)$  is all and  $g_i$  are as for an analysis of J and  $g_i$ .

Тым пута погладопериа сеценог

$$1 \quad \text{PO} \ r = n \dots \mapsto \frac{dr}{ds} = n + r \frac{dy}{ds}$$

Bosed de market et les valvirs and program.

# Example

Subset 
$$(-1)^k \circ \mathcal{F}(n) = 0$$
 for  $(2\pi)^k \circ \mathcal{F}(n)$ 

# Salution:

Given attributed as 
$$\frac{dv}{dv} = \frac{\sqrt{2 - \mu^2}}{2 \pi e^2} e^2$$
 is significant upon each or API  $\mu$  .... (i)

$$y = \exp \left( \log \frac{\sqrt{y}}{\sqrt{y}} + y - i \frac{\ln y}{\sqrt{y}} \right)$$

$$= \left| \log \left( \left( \frac{1}{y} \right) + \frac{1}{y} \right) + \frac{1}{y} \right| + \frac{1}{y} = \frac{1}{y}$$

$$= \left| \frac{1}{y} \right| + \frac{1}{y} = \frac{$$

$$\frac{\partial v}{\partial z} = \frac{1}{2} \frac{\partial v}{\partial z} = \frac{\left[ v^{2} - \frac{1}{2} \right]}{2v^{2}}$$

Fausi a ing tirona lab sa

$$\left|\frac{2r}{1-r^2}\ln r\right| = -\frac{c^2\lambda}{\lambda}$$

buayan gladi 31133.

$$\frac{2\sqrt{2}x^2}{1+x^2} = -\int \frac{2x}{x} + x^2$$

$$\frac{1}{2}(1+x^2) = -\ln x + x = -\ln \frac{1}{x} + \ln x$$
or
$$\ln (1+x^2) = -\ln \frac{1}{x}$$

$$\ln x^2 = -2\pi$$

reading via  $rac{7}{2}$  we get

$$\frac{1}{4} \left( \frac{y}{x} \right)^2 = \frac{6}{2}$$

$$= \frac{1}{4} \left( \frac{y}{x} \right)^2 = \frac{1}{2}$$

$$= \frac{1}{4} \left( \frac{y}{x} \right)^2 = \frac{1}{2} \frac{1}{2}$$

 $\square$  2 graph and solution represents a variety  $\delta \cdot i \tau \Leftrightarrow e^{-\delta}$ 

control to the x-dags 
$$z_{\rm e} = \frac{c}{\sqrt{2}} \left( \frac{1}{2} \right) + c \left( \log z + \frac{2}{\sqrt{2}} \right)$$
 this

 $t = t \log t$  ight graph, graphs



Sug-Grand Collidary sectors by design

# 334.5 Linear Equations of First Order

A difference court and should be interned,  $m{+}$  becomes our able and its afformation after  $m{x}_{1}$   $m{x}_{2}$   $m{x}_{2}$ In the first degree and noting **8 pickti**opaths.

has the religious gradual transfer as a secondar

$$11 - \frac{2y}{2x} + 4y = 2$$

$$2 - y^2 \frac{\pi^2 y}{2x^2} + 4x \frac{\pi^2 y}{2x^2} - 2y = 2$$

equations) of the order of a Cheren is equally while equation ( ) in the order one of a  $\alpha$  (He  $\alpha$  ) is constant. The linkwist percentage the not linear

$$L = \frac{e^{\sqrt{2}}}{2\pi} = 9 = 9$$

$$\frac{\partial f}{\partial z} = e^{i k z} = 2 3 - \frac{f^{\frac{2\pi}{2}}}{c} = 0$$

$$3 = \frac{f^{2\pi i t}}{c t_0} + c$$

# 3.234 Luibnitze linear equation

The Wendard form of a tinear equation of the first order,  $pprox n_0$  ,  $pprox n_0$  as the bintz of near equation, lpha

$$\frac{\partial V}{\partial x} = 0$$
y —  $G$  of energy  $C$  is the interpretation of  $C$  . (1)

First is the equation, intrinsity across the by  $e^{i k n t}$  and s take get

$$\frac{2k}{2k} |a|^{2\alpha} = (2k)^{2\alpha/2} (1 + 2k)^{2\alpha/2} := \frac{2k}{2k} (2k)^{2\alpha/2} = 2k^{1+\alpha}$$

rings injective exception  $e^{R \lambda}$  - rec $e^{R \lambda} \gamma$  , the the largest state.



The  $N \sim e^{\sqrt{2\pi N}}$  on the Royang by which model fither the upon A , there is nearly equivers the second Aon a single " 0.004 , while the integrating restor (LF) of the event constant (i)

$$L_{\rm E} = \varepsilon^{1/2}$$

and the solution is 
$$V(LF) = \int f(x) J_x - [\chi(y) - \chi_x]$$

# 3.2.3.5 Bernoulli's Equation

The equation 
$$\frac{\partial f}{\partial x} + \partial y = \partial \theta$$
 (3)

where 전 Glass functions that is not within the Helpit, is been seen a construction of pages on degrees, is **эф.**т.ээ

To state (i), allowed comparison to the 
$$y''$$
 as the  $y''' \frac{\partial y}{\partial x} = \partial y'' + \mathbf{E} Q$  . (ii)

$$P \in \mathcal{C}^{-1} = \{ x \in \mathcal{X} : (x,y) \in (x,y) : \frac{\partial y}{\partial x} = \frac{\partial z}{\partial x}$$

.. Eq. (i) becomes 
$$\frac{1}{1+\epsilon} \frac{\partial^2}{\partial t} \cdot \partial z = \epsilon 3$$

$$C = \frac{df^2}{dx} + e^{-x}[-\cos x - e(x)] - m_0$$

which is liable u.S. in early garpout a be solved easily

. (1)

Esseniple

Solve 
$$\frac{\partial f}{\partial x} = f + 2x^2$$

Salation.

owery head anthy?

$$\chi^{-\frac{2}{2}}\frac{2}{2\pi}\left(\chi^{2}-\frac{1}{2}\right) = 0 \tag{3.40}$$

$$(u, y^2) = 2.83730^3 - 2.63 \frac{dt_1}{dx} - \frac{dz}{dx}$$

$$<-\infty$$
) (becomes  $-\frac{1}{2}\frac{dz}{dx}+1=4$ 

r,

$$\frac{32}{97} \quad 97 \quad = \quad 9$$

 $p_{\rm eff}$   $p_{\rm eff}$  is the lattice t occurs as

... The continuity is (if is a  $r=r=\left(\frac{1}{2}+\frac{1}{2}\right)_{r}=10^{2}$  , is

$$\begin{array}{ll} \mathbf{u}^{(1)} = \int_{0}^{1} \left( \left( \frac{1}{2} \mathbf{u}^{(2)} + \mathbf{u}^{(2)} \right) \right) d\mathbf{u} d\mathbf{$$

# 1,236 Exect Differential Equations

- **3.** Theorem, the preparation of a property of the differential equations (S.S. ). Ship in fills accepted to

$$\frac{\partial N}{\partial r} = \frac{\partial N}{\partial r}$$

 ${f x}$  . Mediad of solution. In only a shows that  ${f x}$  will clear  ${\cal M}$  or  ${\cal N}$  by  ${f x}$  because  ${f x}$ 

$$S(s) \left[ f(s) ds \right] = 0$$

Every relineable  $\int \mathcal{D} \sqrt{r} \nabla r = 0$ .

$$\mathbf{B}_{A}$$
  $\mathbf{S} = \int d\mathbf{r}^{2} \mathbf{r}^{2} \mathbf{r}$  and  $\mathbf{r}^{2} \mathbf{r} = \lim_{n \to \infty} \mathbf{s} \cdot \mathbf{I}_{A}$  and the unitarity  $\mathbf{G}_{A}$ 

... The setting and Mark = Mdy = 0.05

, while  $\mu$  terms of N not consider  $\psi(dy)=\phi$ 

(Pinylons of policy , whith systems on a page, if  $a=\frac{a h_0^2}{d v}=\frac{a h_0^2}{d v}$  :

# Example:

$$S^{*}(h) = (h + (h)^{*}) \Delta (h + (d)^{2}) = (h + (d)^{2}) \Delta (h + (d)^{2})$$

### Solution:

Step 1: Tex for expreness:

Here 
$$\begin{aligned} \partial_{x}^{2} &= \int_{0}^{\infty} \left( -i \frac{1}{2} \right) \\ & + \frac{i \partial_{x}^{2}}{\partial x^{2}} - \frac{2 \exp \left( -\frac{1}{2} \frac{1}{2} \frac{1$$

The other equation is easy, who no polynomials

 $[bbb] \int (armson k_1 a) \operatorname{suntaining} systy = g$ 

$$|S_{1}(x)| \leq \int (x^{3} + 4x^{3})^{2} dx + \int y^{3} dy = 0$$

$$|S_{2}(x)| = \frac{y^{4}}{4} + \frac{5x^{3}y^{2} - y^{4}}{2} = 0$$

$$|S_{2}(x)| = 5x^{3}y^{2} - y^{4}y = 0$$

# 3.3.7.7 Equations Reducible To Estats Equations

Sometimes a differential countries of internal expert some analysis continuity and gradual defeating selections. The rules to finally integrating between the quality forces for electing to the largest selection of the energy o

In the equality  $M_2 Y + M_3 Y = 0$ 

$$\frac{d h^2}{d x} = \frac{d h^2}{d x} = \frac{d h}{d x}$$
 So a function of yearly = 45)  $(x, y) = e^{-\frac{1}{2} (x, y)}$  is an inverse energy energy for the second state.

**Theorem 2**: 
$$z = \frac{\sin(-2ty)}{M^2}$$
 , self-function on  $y = 0 \times \sin t$ , then  $|e^{(x)/(2ty)}|$  is single eigenvalues.

# Example 1.

**368-5** P 50 Py<sup>2</sup>, (6.1) (9.505 
$$\%$$
 by  $-0$  (9.2) =  $\frac{1}{3.2}$ .

# Salutions

Step (s Hord 
$$R_{ij} = 2 \operatorname{sim}_{ij} \mathcal{Z}_{ij} \operatorname{spr}_{ij} \mathcal{Z}_{ij} + \omega_{ij} \operatorname{spr}_{ij} \mathcal{Z}_{ij}$$

Step 4: Two the page those 
$$\frac{\partial N}{\partial x^2} = A(\cos(y^2))$$
 and  $\frac{\partial N}{\partial x} = y\cos(y^2)$ 

$$\frac{ads}{as} = \frac{3N}{14}$$

and homes, equal time not bress. For we have to find in regarding factor to using within it each time expense.

Step % Find an integrating type gray mystycen fi

$$\lim_{R \to \infty} \frac{\frac{dR}{dr} - \frac{\partial R}{\partial r}}{R} = \frac{4y\cos y^2 - y\cos x^2}{-y\cos y^2} = \frac{y}{y}$$

Which standard data to be theorem to delive the

Harristy of the expect as \$5,000 pct.

$$Percon(A_1 \otimes A_2 \otimes A_3) = 0$$

This equation will sure t and u involves a coupling. Not seek s on + 1.48

**ടന്നെ** 4 ന് ടിലപ്പെടുന്ന

$$\log_{10}\log\left[2v^3dv^3y^2(2v+\int)my]\right],$$

$$-\frac{1}{2}\pi^2 \sin(x) = -x$$

Skep to Make the first for the little is a whomen the in the value problem.

Since 
$$g(t) = \frac{\sqrt{t}}{\sqrt{p}}$$
 
$$\Rightarrow \qquad \qquad \frac{1}{2} e^{pt} \sin \frac{pt}{2} = pt$$

se patisara salurants  $\frac{1}{2} r^2 \sin y^2 r = 0$ 

$$|x| = |x| e^{-(x_0^2 + 10)}$$

# Example 1

$$\operatorname{determined} = g(\operatorname{det} + \operatorname{Lip}^2 f^2 + \operatorname{Lip} \operatorname{hilp} = 0$$

# Solution:

Here, 
$$N = (x^2 + x^2) + 2(x^2)^2 + 3 + y^3$$

$$= \frac{1100}{60.00} \frac{360}{60} \left( \frac{1}{y^2(y^2 + 1)} (4xy^2 + 2 + 3xy^2 + 6 + y^3) \right)$$

$$= \frac{1}{y^2} \text{ contains a unitable ofly a constant }$$

$$= \frac{1}{y^2} \frac{10xy^2 + y^3}{10} = e^{xy^2} = 0$$

...  $1^{-1} \cdot e^{(\nabla x)} = e^{(x)} \cdot y$  With plants the substance of the bosonies  $(xy^4 - f)dx = 0$  which is  $(xy^4 - f)dx = 0$  which is an exact on a long.

$$t_{\rm eff} = 930$$
, or  $2 \frac{1}{2} z^2 \sqrt{1 - 3} z^2 - \frac{1}{3} z^4 = 5$ 

# 3,2,4 (lethogonal Trajectories

# 32A.L Definitions

jąg (gji jęgęli, poęgiz a littorieka y nomochod strenkom krads pach maindzou). A ir jedanty Addych argładara streni drug da i wyże kradsoczach otkan

ppurgat geographie generalie in sejectories is ribuitatata in adalaci matteriadas especie y inferior de le 100

Har Ascando, in a violectric licid. Il dicata e viongravioni i e los liebilitàts à difficial los conductas de considerations de consideration 
n ruja nawi isaka pami ngalandilira dayagajan, a tingkia ana lukyka dilitajisatat asi

### Example 1

The the offregorial algebray of lambate curves  $\omega$  – Constain

# Sulution:

$$\frac{1}{2}\frac{\partial x}{\partial x} + \chi(x) = Q$$

$$f_{i,j} = (-1)\log \frac{\partial \mathcal{D}}{\partial x_i} \log \frac{\partial x_j}{\partial x_j} = \frac{\partial x_j}{\partial x_j}$$

$$= -\frac{r^{2n}}{r^n} = \gamma.$$

For war under department  $\int g dx = \int g dx$ 

$$\frac{2}{2} = \frac{2}{5} + 3$$

 $|x^2-y^2| = 4$  is the or, logar structure of given fair relations of

# \$24.2 Octhogonal trajectory of polar curves.

### Example 2.

Fig. (the collegens) calculate straine of a toward + of attaches

# Sulutiun:

Historian for the 
$$x$$
 and  $y = y^* \sin y$  and  $y = y^* \sin y$ 

Calcion allowers, Plans all minate for

$$TT = \frac{d\lambda}{d\Omega} = 87 \cos \Omega \Omega N \Omega \qquad ...(1)$$

Diside Leccator (n) 55 equation a)

$$\frac{dx^{2} - dy}{x^{2}} = \cot \theta + \frac{dx^{2} - dy}{dx^{2}}$$

$$\frac{dx^{2} - dy}{dx^{2}} = \cot \theta + \dots (11)$$

If ill entertial additional represents given from type  $(\omega_0 + \omega_0)$ 

The state 
$$\frac{\alpha_0}{20}$$
 :  $y = e^{\frac{1}{2}} \frac{d\theta}{dy}$ 

$$\frac{\partial f}{\partial x} = \frac{\partial G}{\partial x} = \cos x \cdot \mathbf{0}$$

$$-i \frac{\partial H}{\partial x} = \cos x \cdot \mathbf{0}$$

$$\frac{\partial f}{\partial x} = -\int f dx \cdot dx \cdot dx$$

$$\frac{\partial f}{\partial x} = -\frac{\partial g \log x \cdot \mathbf{0}}{\partial x} - \cos x \cdot \mathbf{0}$$

$$\frac{\partial g}{\partial x} = -\frac{\partial g \log x \cdot \mathbf{0}}{\partial x} - \cos x \cdot \mathbf{0}$$

is the recurred or the point in a dotable.

# 7.243 Newton's Law of Cooling.

# Definitions

Phylip symatoms hallowy sharpes are record to light over the bin the decreasing entering a 2000/2001.

If you have not refer to a material declaration of the soft of the second of the

To differential coupling 
$$\frac{\partial t}{\partial t} = -i (\theta - \theta_0)$$
.

By the sittle wip example 
$$\left[ \frac{\partial C}{\partial t} - \frac{1}{2} (\theta - \theta_0) \right]$$

$$\Rightarrow \qquad \qquad \text{and } 0 = i (1 + \theta_0) = 0$$

$$\Rightarrow \qquad \qquad \theta = 0, \quad \theta = 0$$

arm polygon of Newton's Swinfold Shings.

# Example3.

a governige algorisation on a case to come to all members, the temporature of an exercistic Coler and Locate temporature of and a store about the stage of the Coler and and a store about the stage of the Coler and the Stage of th

### Culations

According to Newspace Asset (According)

# sized taw of Growth

The parameters amount of a substractive management and substantly a conditional in the substraction x is a fixture of about

1.5 
$$\frac{\partial x}{\partial x} = 0$$

$$\frac{\partial x}{\partial x} = \int S(x) dx$$

$$\frac{\partial x}{\partial x} = \int S(x) dx$$

$$= \int S(x) d$$

# Ezample 4.

thankman is the list end in a suitable to the deal of seaple personal to All the value of Switz in folly have as

in the set I and the monomorphism with interpretation of the  $I = I \setminus \{i,j\}$ 

# Sulution:

Arosinang di terang menu 
$$\frac{d\kappa}{\kappa^2} \approx \kappa_0$$
 Outurn si  $\kappa = \kappa_0 = g g^{\mu}$  . The sign is

P = N = 100 and t = 0 measure and t.

$$\begin{array}{lll} (0.000) & & & (0.000) \\ (0.000) & & & (0.000) \\ \end{array}$$

 $PLAR = 292 \ f + (1.55 \ mod \ mod \ f)$ 

$$S[b] = 10.057$$
  
 $\pm 3.00$ 

$$P = 0$$
  $\frac{2}{2}$  in Equation (1).

ш<mark>ег,</mark>

$$N = 100 \, \mathrm{kg}^{\frac{3}{2} \frac{1}{2}} = 100 \, \mathrm{kg} \, \mathrm{kg}^{\frac{3}{2} \frac{1}{2}} \approx 505$$

# 3.245 Limoi Decay

### Doffmhlans

The reconstitution is a second by additional subtractive permitted in the single problem of the best and accomm

Todda amn a pe i sais

$$\frac{\partial x}{\partial x} = -i x (2 + i \phi)$$

$$\frac{\partial x}{\partial x} = -i \int dx dx$$

$$\frac{\partial x}{\partial x} = -i x - k dy dx$$

$$\frac{\partial x}{\partial x} = -i x - k dy dx$$

$$\frac{\partial x}{\partial x} = -i x - k dy dx$$

### Promotion 8

FOUR plade for one loss is disconsisted that the single Haker subject to disconsistent  ${\cal A}$ 

# Solution:

7/9 Jp. 1

rocci e sajno awa isa say

$$Y = X \pi^{-\alpha}$$

$$\begin{aligned} & 0, y = y_{+} & 0, \\ & y = 100, \\ & y = 100, \\ & y = 100, \\ \end{aligned}$$

 $(\mathbf{u}, \mathbf{v} \in O) := \mathbf{H}(\mathbf{v}, \mathbf{v}, \mathbf{v}, \mathbf{v}, \mathbf{v})$ 

from 
$$x_0 = x_0 \lesssim 2k$$
. In  $x_0 = x_0 \lesssim 2k$ .

$$z = \frac{1}{5} \ln \left[ \frac{7}{6} \right]$$

is Fig. stor (i) then thes 
$$z = 400 e^{\frac{1}{12} (1+\frac{1}{2})^2} \qquad ... ) u$$
 Sur  $z = 0.05$  contains (i) i

$$\begin{aligned} & \frac{48 - 10000^{10^{10}}}{10^{2}} \\ & \frac{40^{2} 10^{6} \cdot 7_{1} \approx 9 \left(\frac{1}{10}\right)}{10^{6}} \\ & = \frac{100^{6} \cdot 0}{10^{10}} \approx 84.5 \, \mathrm{d}x_{10}. \end{aligned}$$

# 3.3 Linear Differential Equations (Of n<sup>th</sup> Order)

# 3.3.1 Definitions

Linear differential equations are trace in which the dependence of some x derived vector only in the linear expension of x in x . Expension x in x is the proof of the form x is general result from the coupling of the form x.

$$\frac{\mathcal{L}(x)}{\partial x^{n}} + i\lambda \frac{\partial^{n-1} y}{\partial x^{n-1}} + \beta, \quad \frac{\partial^{n-2} y}{\partial x^{n}} + \dots + \partial_n x^n = 0$$

where  $\phi_{ij}(\mu_{ij})=0$  ,  $\mu_{ij}(\mu_{ij})$  and Z we have interestingly

Under Official Equations with Constant Double Identification in the You

$$\frac{\partial^2 \mathcal{Y}}{\partial x^2} + 2 \frac{\partial^2 \frac{\partial}{\partial x}}{\partial x^2} + 2 \frac{2^{n-2}}{\partial x^2} \frac{\mathcal{Y}}{\partial x} = - 2 k_n y = 0$$

concrete,  $K_{ij}$  ,  $K_{ij}$  are constants and STS on inclient i words. But the patients are most than until these along of electronics are satisfied words of the respectively a patients.

If **Theorem II**  $v_{p, \theta_0}$  are only two solutions of the  $\phi_1$  with  $\phi_2$ 

$$\frac{\partial^2 f}{\partial x^2} = \frac{\partial^{-1} f}{\partial x^2} + \mathbf{v}_y \frac{g^{-1}}{\partial x^2}, \qquad \delta_{x,y} = 0 \tag{10}$$

Then  $\phi(y_i) \in \mathcal{C}_i \times \mathbb{R} = \mathcal{L}_i'$  is also its solution.

Since the desired moves by an element of the 
$$\frac{\partial^2 u}{\partial x^n} = e^{\frac{\partial^2 u}{\partial x^n}} = e^{\frac{\partial u}{\partial x^n}} = 0$$
 . Then

- 2. Curve the general sourcements of the amplification of the nin proprior main arbitrary constant in for the all their section, that they have  $(x_1, x_2, \dots, x_n)$  is a number of an independent of the one of the liber  $\phi_{(x_1, \dots, x_n)}$  is a number of the source continuous forms.
- $\delta = -1 \gamma + 3 \theta$  and  $\delta > 0$  do an adjustment of

$$\frac{d^{2}h}{dx^{2}} + h \frac{2^{2} - f}{dx^{2}} = 1 + h_{1} f + h_{2} f + h_{3} f + h_{4} f + h_{3} f + h_{4} f + h_{3} f + h_{4} $

Jen

$$\frac{\sqrt{d}x}{dx^2} = k_0 \frac{\partial^{N-1}x}{\partial x^2} + \dots + k_0 x = X \qquad (100)$$

As both given by the sequence 
$$\frac{\mathcal{L}'(\Sigma-F)}{|x|^{p-1}} = c_{\frac{1}{2}} \frac{\sigma^{p-1}(\Sigma-F)}{|y|^{p-1}} = -2c_{\frac{1}{2}} C_{\frac{1}{2}} C_{\frac{1}{2}} C_{\frac{1}{2}}$$

The stress that y = y + y is the somplets so obtained (iii).

The contribution for the complementary topology (C,F) and the period and a specific for the complementary topology (C,F) and the period of the period of the complementary (C,F) and (C,F) and (C,F) and (C,F) and (C,F) are complementary (C,F) and (C,F) and (C,F) are complementary (C,F) and (C,F) are comple

Inacid area zinora (C.51 diffición C.5 a P.L

To simple the  $a_0$  ,  $a_0$  equation into we have  $a_0$  by tind the 0.7 i.e.  $a_0$  example in  $a_0$  or  $a_0$  and ந்துள் அடு நெருக்கு கொண்ணின் இறி

Operator 3 Painti sp
$$\frac{\lambda}{ds}, \frac{\sigma^2}{ds^2}, \frac{\sigma^2}{ds^2}$$
 as that

 $\frac{M^2}{dx} = \pi_V \frac{d^2y}{dx^2} = \Phi^2 \sqrt{\frac{g^2y}{dx^2}} = \mathcal{D}(y | y | | \mathbf{J} | \mathbf{e} | \mathbf{a} | \mathbf{g}(\mathbf{i}) \cdot \mathbf{g}(\mathbf{j}) \text{ stress and save then } \mathbf{e} \cdot \mathbf{v} \cdot \mathbf{z}_V \text{ which is } \mathbf{v}$ 

$$(G^{*} - e_{i} \mathcal{D}^{*}) = e_{i}^{*} \mathcal{F} = \emptyset$$

of elective C , and C is the support of C

Propried with both State of the Association of a flowing region of the Propried Confidence of Association (Confidence of Association Confidence of Association (Confidence of Association Confidence of Association Confidence of Association Confidence of Co agreement is the adjournment of the property of the southern and the south and the southern are accounted to the southern and the southern are southern as uthern as the southern are southern as the southern are southern ты устон Болька са

$$\begin{split} \frac{d^2 y}{dx^2} - 2 \frac{d^2 y}{dx} - S y &= (50.4, 50 + 50) \\ &= (50.4, 5)(50.4, 50)(60.4)(50.4, 50.4, 50) \end{split}$$

# 3.3.2 Rules for Finding The Complementary Function

significantly acception 
$$\frac{\partial x^2}{\partial x^2} = \kappa \frac{\partial^{2/2} y}{\partial x^2} - \kappa_2 \frac{\partial^{2/2} y}{\partial x^2 \partial x^2} \qquad \kappa_1 y = 0$$
 (i)

word foliate paracerle.

 $\mathbb{T} = g((r_i) \circ r_i) \circ r_i  

$$(x^{*} + x_{i}x^{*} + x_{i}x^{*})^{*} + \dots + \lambda 2y = 0$$
(6)

lla symbolic de all cleat aduateo to caso Lei

$$TS = \mathbf{k} \cdot T^{(2)} + 3 \cdot TS^{(2)} = -\mathbf{k} \cdot \mathbf{k}_1 = -3$$

is called the autoric greater (2.7% by  $m_{
m p}, m_{
m p} = m_{
m p}$  by the (2.7%) denoted the (2.7%)

Case I, that the noots be real and offerent, then this equivalent to

$$(0, m_{i}^{2}(0, m), 10, m_{i}^{2}(0, -1))$$

Now (it will be established by the equation of  $P_i = n_i(y) = 0$  , i = 1 or  $\frac{\partial P_i}{\partial x_i} = n_i(y) = 0$ .

Trivial discreption and Error in

... its polarization 
$$y = y \frac{\partial u}{\partial x} = (a - ab y - a y)^{\frac{1}{2} - a}$$

Similarly is not like lesses in  $G_0^{\mu}$  can be taken in day emery most be defined by the G case of G

$$(f_1 + \alpha_1)(g + \beta_1)(f_2 + \alpha_2) = (f_1 + \alpha_2) = (f_2 + \alpha_2)(g + \beta_1)(g^{2n} + \beta_2)$$

That the contribute solution of 
$$y$$
 is  $y = e^{-y/2} + e^{-y/2}$  . The  $y^{(2)}$ 

**Case II. If two roots are act at \theta at m\_{q} = m\_{q}^{-1} (then (m\_{q}) two constants** 

$$\begin{split} \mathbf{y} &= (\varphi_1 - \varphi_2) \mathbf{y}^{(1)} + \mathbf{c}_2 \mathbf{y}^{(1)} + (\varphi_1 \mathbf{y}^{(1)}) \\ \mathbf{y} &= (\varphi_1 - \varphi_2) \mathbf{c}_1 + (\varphi_2 \mathbf{y}^{(1)}) + (\varphi_1 - \varphi_1)^{(1)} \end{split}$$

 $1 \cdot \cdot \cdot \phi = 0$ . For on the argumon claim G

has anti- n = 1 training contrarishmal is, therefore, not the couplete souther of or to the contrariation we produce as to away.

The pair of the seminate we man corresponding to the recoaling root is the sum of  $a \in \mathbb{R}$  with  $a \in \mathbb{R}$  and  $a \in \mathbb{R}$ 

Poling Williams 
$$y=z$$
 , the corner of  $|m_{\rm ph}|=0$  or  $\frac{dz}{dz}$  ,  $|m_{\rm ph}|=0$ 

 $\square$  is in Labelta's Inability and  $\square$   $A = e^{-i \gamma}$ 

... Its solution is 
$$|z_{ij}|^{-1/2} = |z_{ij}|^{\alpha} |z_{ij}|^{-\alpha} e^{i\alpha z_{ij}}$$

$$\nabla u_{i,i} = (1 - \eta_{i,i}) \, \varphi = (z + \gamma_i g^{(1)}) \, e^{-\frac{2\varphi}{2g}} + a_{i,j} \varphi = a_{i,j} e^{-\gamma_i} \, (2)$$

ha fittei g $\mathcal{D}^{(1)}$  be abbord (a) is

$$y + (a_{12} - a_{2})a_{12}$$
  
 $y + (a_{12} - a_{2})a_{12}$ 

**ب** 

Thus the complete solution of  $\Omega(x) = (p|x| | p_x^2(x)^{1+\alpha} + q_x^2 x^{1+\alpha} + \dots + p_x^2 x^{1+\alpha})$ 

If, incomes the A  $\mathbb{C}_{+}$  we three about its first  $m_{1}$  ,  $m_{2}$  ,  $m_{3}$  , that the complete solution  $m_{2}$ 

$$p = (2x + 6x + 6x)e^{ixx} \cdot c_i e^{ixx} \cdot c_i e^{ixx} \cdot c_i e^{ixx}$$

Case III. If one pair of roots the imaginary, i.e.

$$\begin{aligned} B &= 5 - i3, \\ A &= 6 - i6, \end{aligned}$$

er her ombele abilbar 8

$$\begin{split} & = - c_1 e^{2\pi i \pi a_1} + c_2 e^{2\pi i \pi a_2} + c_3 e^{2\pi i \pi} + c_4 e^{2\pi i \pi} \\ & = - c_1 e^{2\pi i \pi a_2} + c_3 e^{2\pi i \pi} + c_4 e^{2\pi i \pi} + c_4 e^{2\pi i \pi} \\ & = - c_1 e^{2\pi i \pi a_2} + c_2 e^{2\pi i \pi a_2} + c_4 e^{2\pi i \pi a_2} \\ & = - c_4 e^{2\pi i \pi a_2} + c$$

 $\mathcal{M}$   $\rightarrow$   $\mathbb{R}$ 

**T**..

Case IV. Pitwo don chimag narviroota be adua 15

$$\begin{array}{ll} m_1 = m_2 = r + \tilde{m} \\ m_2 = m_2 + \tilde{m} \end{array}$$

to an invidence in the lensing ere solution to

$$\gamma_{ij} = \left( e^{i t \sqrt{j}} (c_{ij} t + c_{ij} t y) e^{i t w} + \left( c_{ij} t + c_{ij} \right) \cdot d t \right) (c_{ij}) = 1 \cdot 7 \cdot 6^{MN}$$

# 3.3.3 Inverse Operator

is a finite of  $\frac{1}{2\Omega}$  with not functioned by not detecting arbitrary curvature and twice decreed too.

by 325 arcse $X_0$ 

$$H^{\sigma}\left(\left(\frac{d\Omega}{d\Omega}\right)^{2}\right) = \mathcal{L}$$

2.31

 $I(s,s) = \frac{1}{n} \mathcal{L}(v_2,s) \text{ for the property of all } (v-X_{n}r_1,s_1) \text{ for the } r_2,s_3 \text{ for the } s_3,s_4 \text{ for the } s_4,s_4 \text{ for the } s_4$ 

Clay costly 0.29 and  $\sim 0.29$  distiny a tension and  $\sigma$ 

$$\frac{1}{D}x = \int x dx$$

$$\frac{1}{2}x = 0$$

$$|O(9) \le \log \log n \le |C(g)| \le \log n$$

$$\mathcal{R} = \frac{\partial \mathbf{v}}{\partial z}$$

$$2.89 \pm 10 = 1.7, \qquad 3 = \int X dx$$

$$\frac{1}{U} = \int X dx$$

$$\frac{1}{U - x} = \int X dx$$

$$\frac{1}{U - x} = \int X dx$$

$$\frac{1}{O+s} \nabla = g \tag{3}$$

Operating its  $\mathcal{O}_{\pm \lambda_0}$ 

$$\begin{split} Q^{n} - \lambda^{n} \frac{1}{2^{n-2}} dx &= (D - \lambda) y \\ &= \frac{\partial y}{\partial x} - y y - \theta \cdot \frac{\partial y}{\partial x} - y y = \mathcal{X} \end{split}$$

enunis a ceipnitz simpar apuat ansi

r l∃jergečia skuoris

$$\mathcal{N}^{\mathrm{self}, \, \mathrm{loc}} = \int \mathcal{N} \mathcal{O}^{\mathrm{loc}} \, \, \mathcal{O}_{\lambda}$$

integration, body, added to (1) appears appears any sense in

Thus 
$$\frac{1}{C-e} \nabla = y - g^{2} \int X e^{-g^{2}} dx$$

# 3.3.4 Bules For Finding The Particular Integrals

Fig. 4: explicitly explicit 
$$\frac{\partial^{2} f}{\partial x^{2}} = b_{1} \frac{d^{2} f}{dx^{2}} + c_{2} \frac{d^{2} f^{2} dx}{dx^{2}} + \cdots + c_{n} g = g^{n}$$

Officially the initial  $i_{N}(Q^{N} - g_{\mu\nu}r^{N} - g_{\mu\nu}r^{N} + ... + h_{M}y + R)$ 

$$P_{i} = \frac{1}{2^{ij}} \frac{1}{\kappa_{i}^{2} e^{ij}} \frac{\chi}{\nu_{i} e^{ij}} \chi^{ij}$$

Casel, When  $x = e^{\gamma t}$ 

$$\begin{split} (\mathcal{D}' + e_{ij}\mathcal{D}'' + e_{ij}(\mathcal{D}'' + e_{ij}(\mathcal{D}'') + e_{ij}(\mathcal{D}'')) &= (a^{ij} - b_{ij}a^{ij}) \dots \cdot b_{ij}(e^{ij} \\ &= (\mathcal{D}(e^{ij}) - b_{ij}(e^{ij})) \end{split}$$

Operating on behind due by

$$\eta_{(i,j)}(\beta D) \Theta^{(i,j)} = \eta_{(i,j)}(\beta A)^{i+1}$$

$$|\mathcal{S}^{k}| = |\eta| \eta_{\frac{k+1}{2}}^{-1} ...^{k}$$

 $f_{\rm e} = g_{\rm p} + 2 \sigma$ 

 $\frac{1}{\partial \Omega} e^{ist} = \frac{1}{\partial \Omega} e^{ist}$  should be  $f(s) \in I$ . :

If f(x) = 0. The decay, f(x) = f(x) is an f(x) = f(x) of f(x).

 $\mu_{\rm coll}$  be to set that in field cost,

$$|g_{j}|^{2} E^{j2} = -\pi \frac{\pi}{100} E^{2j} \qquad (30)$$

$$\mathcal{F}(p) = 0 \text{ then applying its equality we get } \frac{1}{6C_1}e^2 = 2\frac{1}{(n,q)}e^{2r}, \text{ throweod } \ell(q) \neq 0 \tag{2.19}$$

and at on.

# Example 1. Solve

$$\frac{\partial^2 v}{\partial x^2} + c \frac{\partial F}{\partial x} + g v^{-1} = F e^{it}$$

Salution:

$$5.6 \pm 85 \pm 307 = 567$$

$$\frac{(\omega^2+8\omega)\cdot 30y=580}{5^2+50\cdot 5^2+300\cdot 5^2+300\cdot 5},$$
 which expresses that  $C=0$ 

$$|A_{i}| = \frac{1}{|B_{i}|^{2} + 2|B_{i}|^{2}} a_{i} (5|B_{i}|^{2}) = 3i \frac{|B_{i}|^{2}}{|B_{i}|^{2} + 6|B_{i}|^{2}} = \frac{1}{|A_{i}|} (A_{i})$$

the complete scalable is: 
$$(C_1 + C_2 \times H^{-1}) + \frac{3e^{2\epsilon}}{22}$$

# Ecomple 2.19th 3

$$\frac{ds^2}{ds^2} + 2\frac{ds}{ds} + 3s^2 + 3s^2$$

Solution:

$$100 \, \mathrm{GeV}$$
 and  $100 \, \mathrm{GeV}$ 

25L 0

$$\begin{array}{ccc} (\Omega + 3D + 3)y & \text{ if } w^D \\ (D) + 3D + D & \text{ if } (D + D) & \text{ if } E = 0 \text{ if } D = 0 \text{ if } \\ (DD + D) + D & \text{ if } E = 0 \text{ if } D = 0 \text{$$

$$P = -\frac{2}{4\pi^2} \left( \frac{3(2-3)}{3(2-3)} (6^{\frac{1}{2}}) + \frac{3(2-3)}{3(2-3)} (36^{\frac{1}{2}}) + \frac{3}{2} (3(6^{\frac{1}{2}}) + 36^{\frac{1}{2}}) + \frac{3}{2} (3(6^{\frac{1}{2}})$$

stamptone or stamps

$$-y = (C_1 + C_2 + C_3 + C_4 + \omega^2) c^2$$

Case II. When  $X = \sin(2x + \phi)$  or  $\cos(4x + b)$ ,

$$\frac{1}{r(2^{2})} S(1(2s+0)) = \frac{1}{R(-s^{2})} - r(2g+1) \text{ where the } 2(-s+1)$$
 ... (18)

 $|\hat{r}|\hat{r}|^2$  | = 0. the also require when a constant we set that

$$\cdots \qquad \qquad \frac{1}{B^{2}(\pi^{2})} e^{i \cdot \mathbf{r} \cdot \mathbf{r}} (e^{\mathbf{r}} + B^{2}) = -\epsilon \frac{1}{B(-\pi^{2})} e^{i \cdot \mathbf{r}} (\mathbf{r} \cdot \mathbf{r}) \text{ provided } \pi(-\mathbf{r}^{2}) = 0. \tag{3}$$

$$1 = -r \left( \frac{1}{r(\omega)^2} \right) + \Gamma_0 \left( \frac{1}{r(\omega)^2} \right) \cdot \operatorname{GL}(r+1) \\ y = -r \cdot \frac{1}{r(\omega)^2} \times \operatorname{C}(s_2 + B) \cdot \operatorname{Gradien}(FV \otimes S) + \operatorname{Grad$$

Similarly, 
$$\frac{1}{(2\pi^2)}\cos(\mathbf{r}; -\mathbf{r}) = \frac{1}{\sqrt{-3\pi}}\cos(3\pi \cdot \mathbf{r}) \text{ provided if } \sin\phi \neq 0,$$

$$\frac{1}{r_1} = -i(\pi r_1) + \frac{1}{r_2} \exp(\pi r_2 + 2i) = -i + \frac{1}{r_2} \exp(\pi r_2 + 2i) \exp(\pi r_2 + 2i)$$

$$\Gamma = -\frac{\Gamma(-g^2) - C_1}{\rho(\sigma_1)} \sin(\sigma \sigma + \rho) - \cos(\frac{1}{\sigma(-g^2)} \log (g_0 - g_1) \log \sigma \cos \sigma + C_1 - g_1) \cos \sigma \cos \sigma \cos \sigma$$

# Example Library

Salution:

$$\frac{(L^2+4)_{\mathcal{F}} - \sin^2 \theta}{L^2+4 - \cos^2 \theta}$$

$$\frac{L^2+4 - \cos^2 \theta}{L^2+4 - \cos^2 \theta} = \frac{\pi}{2} \sin^2 \theta}{4L + \frac{1}{2} \cos^2 \theta} = \frac{1}{2} \sin^2 \theta}$$

$$\frac{dL}{dL} = \frac{1}{2} \cos^2 \theta} = \frac{1}{2} \sin^2 \theta}{L^2+4} = \frac{1}{2} \sin^2 \theta}$$

Complete a 4 mention

$$\mathcal{F} = \mathcal{F}(ab) P e^{-\frac{1}{2} g_{A}} \mathbb{E}_{a} = -\frac{1}{2} g_{A} \mathbb{E}_{a}$$

Etample 2.F: vg.

$$\frac{\partial^2 v}{\partial x} + \frac{\partial v}{\partial x} : y = \cos 2x$$

Solution:

$$A = \frac{(D'' - \omega + 1) x - \cos x + 2}{2x + 2}$$
 A solitary to explain to 
$$D = 0 + 1 = 0$$

$$D = \left[\frac{-2 \log 3}{2} \log \log - \log \frac{\sqrt{3}}{2} \log \frac{\sqrt{3}}{2} \log \frac{\log \sqrt{3}}{2}\right]$$

$$\begin{aligned} \Gamma &= \frac{1}{2^2 - 2^{n-1}} \cos s \, \delta_S \\ &= \frac{1}{(-2^n + s)} - \cos s \, \delta_S = \frac{1}{n-2} \cos s \, \delta_S \\ &= \frac{2^n + s}{2^n + s} \cdot \cos s \, \delta_S = \frac{n^n}{(-2^n)^n} \frac{3}{s} \cos s \, \delta_S \end{aligned}$$

$$|z| = \frac{\pi}{2} (18 - 3) \cos 2\pi \epsilon = -\frac{1}{2} (-3 - 3) \sin 2\pi \epsilon \cos 2\pi \epsilon$$

dung Heli abidbo s

$$\left| \frac{1}{2} \right| = \left| \frac{\sqrt{2}}{2} \right| \log \left| \frac{\sqrt{2}}{2} \right| + \log \left| \frac{\sqrt{2}}{2} \right| + \frac{1}{13} \left| 2 \log \left| 2 \right| + \log \left| 2 \right| \right|$$

Example 5.% Art.

$$(\mathcal{G}^* + A_{\mathcal{F}}) = \operatorname{sub}(\mathcal{B})$$

Solution:

$$\frac{((\beta - \Delta)) = \cos(2\pi)}{b^2 - b} = 0$$

 $6.3189 \pm 126.6$ 

$$\begin{aligned} & = \frac{1}{2} \sum_{i=1}^{N} \frac{1}{2} (i + 1) + \frac{1}{2} \sum_{i=1}^{N} \cos 2x_i + \frac{1}{2} \sum_{i=1}^{N} \sin 2x_i + \frac{1}{2} \sin 2x_i \end{aligned} = \frac{2}{2} \sin 2x_i + \frac{1}{2} \sin 2x_i + \frac{$$

Companionio

$$y = -\Delta \log (y + 2 \times r2 + r\frac{r}{4} \sin 2x)$$

Case III. What  $X=x^{(i)}$ 

Нега

$$P(t) = \frac{1}{n \pi_0} g^{n_0} + [n^{(n)}]_{i=1}^{n-1} e^{n_0}$$

Expendingly the sampling toward of the factor of the following operation of the  $(S^{*},S^{*})$  is a  $(S^{*},S^{*})$  of  $(S^{*},S^{*})$  and  $(S^{*},S^{*})$  is the  $(S^{*},S^{*})$  and  $(S^{*},S^{*})$  in  $(S^{*},S^{*})$  is the sample of  $(S^{*},S^{*})$  and  $(S^{*},S^{*})$ 

Example 1, 45, 95

$$\sup_{x\in \mathbb{R}}\|\|g(x)\|_{L^{2}(\mathbb{R}^{2})}^{2}\leq \frac{2^{2}}{2^{2}}+\frac{2^{2}}{2^{2}}+2^{2}=2^{2}-2^{2}=2^{2}$$

### Solution:

Cover appropriately appropriately in  $(X - S)y = x^2 + x + 1$ 

$$\begin{aligned} P &= -\frac{1}{2}(x^2 + y^2) + \frac{1}{2}(x^2 + 2y + 4y) - \frac{1}{2}(x^2 + 2y + 4y) \\ &= \frac{1}{2}(x^2 + 2y + 2y^2) + \frac{1}{2}(x^2 + 2y + 2y + 2y) \\ &= \frac{1}{2}(x^2 + 2y + 2y + 2y + 2y) \\ &= \frac{1}{2}(x^2 + 4)\sigma x + \frac{2^2}{2} + 2x \end{aligned}$$

Case IV. When  $X=\mathbf{e}^{i_1}V_i V_i$  being churchon that

to da preta els 1991

$$\begin{aligned} & \mathcal{D}_{0}^{*}\mathcal{D}^{*}(S) = & \mathcal{D}^{*}\mathcal{D}^{*}(S), & \mathcal{D}^{*}(S) = \mathcal{D}^{*}(S) \\ & \mathcal{D}^{*}(S^{*},S) = & \mathcal{D}^{*}\mathcal{D}^{*}(S), & \mathcal{D}^{*}(S^{*},S) = & \mathcal{D}^{*}(S^{*},S) = & \mathcal{D}^{*}(S^{*},S) \\ & \mathcal{D}^{*}(S^{*}(S)) = & \mathcal{D}^{*}(S^{*},S) = & \mathcal{D}^{*}(S^{*},S) = & \mathcal{D}^{*}(S^{*},S) \end{aligned}$$

ordingera a

ें। संस्थानधाठको dess ayır २०५०,

$$\frac{\eta(S)(g^{2}(g)) = \frac{1}{h(G)}e^{2g}(S - g)}{e^{2g}(G - g)}$$

$$e^{2g}(f) = \frac{1}{h(G)}e^{2g}(G - g),$$

$$e^{2g}(f) = g(f) = g$$

$$e^{2g}(f) = \frac{1}{h(G)}e^{2g}(f)$$

$$e^{2g}(f) = \frac{1}{h(G)}(e^{2g}(f))$$

$$e^{2g}(f) = \frac{1}{h(G)}(e^{2g}(f))$$

$$e^{2g}(f) = \frac{1}{h(G)}(e^{2g}(f))$$

Example 1.45 vs.

Salucion:

$$\begin{aligned} & \mathcal{C}^{(7)} - 4\mathcal{D} - 4\mathcal{J}_{7} = \mathcal{F}_{3}^{(5)} \\ & \mathcal{C}^{(7)} - \mathcal{C}_{3}^{(5)} + e = \mathcal{C}_{3}(\mathcal{D} - 2)^{3} + \mathcal{C}_{3}^{(5)} \mathcal{D}_{3} = 2, 2 \\ & \mathcal{C}^{(7)} - \mathcal{C}_{3}^{(5)} + \mathcal{C}_{3}^{(5)} \mathcal{C}^{(5)} \\ & \mathcal{C}^{(7)} - \frac{1}{5^{2}} - \frac{1}{4\omega} \mathcal{A}^{(5)} \otimes \mathcal{C}^{(5)} = \mathcal{C}^{(5)} \frac{1}{(\mathcal{C} + 2)^{5}} \mathcal{C}_{3}(\mathcal{D} - 2) - \mathbf{A}^{(5)} \\ & \mathcal{C}^{(7)} - \frac{1}{5^{2}} \mathcal{C}^{(7)} + \frac{1}{5^{2}} \mathcal{C}^{(7)} + \frac{1}{5^{2}} \mathcal{C}^{(7)} + \frac{1}{5^{2}} \mathcal{C}^{(7)} + \frac{1}{5^{2}} \mathcal{C}^{(7)} \\ & \mathcal{C}^{(7)} - \mathcal{C}^{(7)} \mathcal{C}^{(7)} + \mathcal{C}^{(7)} + \frac{1}{5^{2}} \mathcal{$$

Exemple 2, 5 obt.

$$(12 - 50 + 3) / = 60 \cos 2x$$

Schutiun:

$$\begin{aligned} & (2F - 5E + 5)V - 4F + (8E) \\ & (3F - 5E + 5) = 0, \\ & (3F - 5)(2F - 5) = 0, \\ & (3F - 5)(2F - 5)(5) \\ & (3F - 5)(2F + 5)(5) \\ & (2F - 5)(2F + 5)(5)(2F) \\ & (2F + 5)(2F + 5)(2F + 5)(2F) \\ & = (2F - \frac{1}{2F} + 2E + 2F) \cos 2x + 2F + \frac{1}{2F} \cos 2x + 2F + \frac{1}{2F} \cos 2x \\ & = (2F - \frac{1}{2F} + 2E + 2F) \cos 2x + 2F + \frac{1}{2F} \cos 2x \\ & = (2F - \frac{1}{2F} + 2E + 2F) \cos 2x + 2F + \frac{1}{2F} \cos 2x \\ & = (2F - \frac{1}{2F} + 2E + 2F) \cos 2x + 2F + \frac{1}{2F} \cos 2x \\ & = (2F - \frac{1}{2F} + 2F) \cos 2x + 2F + \frac{1}{2F} \cos 2x \\ & = (2F - \frac{1}{2F} + 2F) \cos 2x + 2F + \frac{1}{2F} \cos 2x \\ & = (2F - \frac{1}{2F} + 2F) \cos 2x + 2F + \frac{1}{2F} \cos 2x + 2F \cos 2x \end{aligned}$$

$$= \frac{v'}{4\pi} ((-2\pi) 2x + 2\cos 2x) = -\frac{\theta'}{20} (0 \sin 2x + \cos 2x)$$
$$y = (-6\pi) x (-6\pi)^2 x - \frac{\theta'}{20} (0 \cos 2x + \cos 2x)$$

Case William wife stoy rather function or at

Here, 
$$P = \pi \frac{1}{(8D)} \Delta t$$

is  $Q_{2} = (2 - m_{1}) (D + m_{2}) = D(D + m_{1})$  in solving the particular  $t$ .

$$P_{1} = \frac{A}{(2 - m_{1})^{2}} \pi \frac{P_{2}}{D - m_{2}} \pi = \frac{P_{2}}{D - m_{1}}$$

$$P_{2} = \frac{A}{(2 - m_{1})^{2}} \frac{1}{D - m_{2}} \pi \frac{P_{2}}{D - m_{2}} \pi = \frac{P_{2}}{D - m_{1}} \pi$$

$$P_{3} = \frac{A}{(2 - m_{2})^{2}} \frac{1}{D - m_{2}} \pi \frac{P_{2}}{D - m_{2}} \pi = \frac{P_{2}}{D - m_{2}} \pi \frac{P_{2}}{D$$

Obs Tive net estimações en ono ono con, translata, ba employes se unaida perfestor ମହିଷ୍ଟ ଆମ ଅଟେ ଅନୟ । ସଂଖ୍ୟା

 $= \langle \alpha_1 | g^{\alpha_1} \beta_1 | \mathcal{H}_{S} \rangle^{-2\beta_1} d_1 \cdots d_{2\beta_1} e^{2\beta_1} \left( \langle g | e^{-\beta_1 g_1} d_2 \rangle + \langle 1 | \beta_1 | e^{-\beta_1 g_1} \right) \partial_1 e^{-\beta_1 g_2} d_2 \right)$ 

# 3.3.5 Summary: Working Procedure to Solve The Equation:

$$\frac{G^{A_{1}}}{G_{1}g^{A_{1}}}+\hat{g}_{1}\frac{g^{A_{1}}}{G_{1}g^{A_{1}}}\frac{G_{2}}{G_{1}}+1+\hat{g}_{1}\frac{G_{2}}{G_{2}}+h_{1}g_{1}=-g^{A_{1}}$$

gray kon Leigo skerkalomi s

$$\hat{g}(\hat{z}^0) = \mathbb{E}_{\hat{z}}(\hat{z}^{(0)}) + \dots + \hat{\delta}_{n+1}\hat{z} + \hat{\delta}_n(\hat{y}) = \hat{A}_n$$

# Step I. To Find the Complementary Punction

) Whethelds  $\lim_{n\to\infty} (1+\delta_n)^{n+1} = \lim_{n\to\infty} (1+\delta_n)^{n+1} = \lim_{n\to\infty} (1+\delta_n)^{n+1}$ 

Principle to the Contest follows:

Days of A F	<u> </u>
1 musik myuarda and oltrosom teodal	De transperier – Aleren 🛊 .
Substantial (hearth and could be a set)	$  z_{1}   \leq \omega  z^{1/2} + 2\varepsilon e^{2\pi i z} + \varepsilon.$
$S_{i}(n, n_i, n_j, n_i, n_i)$ (Inverted and $i = 1, \dots, n_i$ ) equal to $i \ge 1$	$(10) - 2 \frac{1}{6} J - 2 \frac{1}{3} J^{\frac{3}{2}} (\pi^{-1/2} + 1) J^{\frac{3}{2}/2} = \dots$
Trompton-group and magnety rough	$\int x^{\mu}(a_{\parallel} a_{\parallel} a_{\parallel} a_{\parallel} a_{\parallel} b_{\parallel}) + g e^{\mu  x } =$
5 A L 15, A L 55, W. 1, S2 (48) (6794) (8) mag(hary regis)	$\frac{1}{2} e^{\frac{\pi}{2} \left[ \int_{\mathbb{R}^n} dx  dx  dx  dx  dx  dx  dx  dx $

# Step IL To Find the Particular Integral

Them synthetic in 
$$F = \frac{1}{|D'| + kD' - kD' - kD'|} Z_{ij} (2^k) Z_{ij}^2$$
 
$$= \frac{1}{k!} C_{ij}^2 + k \cdot \frac{1}{k!} \frac{1}{k!} F$$

$$\begin{split} \mathbf{P} &= \frac{1}{2(2)} e^{i \mathbf{r} \cdot \mathbf{r}} \cdot \mathbf{p} \cdot \mathbf{r} (\partial - \partial z) & = 5 \mathcal{E}(\pm 0) \\ &= \mathbf{r} \frac{1}{2(2)} e^{i \mathbf{r}} - \mathbf{p} \cdot \mathbf{r}^{2} + \mathbf{r} & = 5 \mathcal{E}(\pm 0) \\ &= e^{i \mathbf{r}} \frac{1}{2(2)} e^{i \mathbf{r}} - \mathbf{p} \cdot \mathbf{r}^{2} + \mathbf{r} & = (5 \mathcal{E}(\pm 0) - 0) \mathcal{E}(5) \pm 0 \end{split}$$

and spien.

Fig. 4. 
$$P(S) = \operatorname{cond} \operatorname{cold} \operatorname{cl}(SS) \times_{\mathbb{R}^{n}} C.$$
 
$$P(S) = \operatorname{cold} \operatorname{cold} \operatorname{cold} \operatorname{cold} \operatorname{cl}(S) \times_{\mathbb{R}^{n}} C.$$

 $-M(\mathbf{e}_{1}) \cdot = \sin(\mathbf{g}_{2}) \cdot \exp(\cos(\mathbf{g}_{2}) + \mathbf{g}_{3})$ 

$$\begin{array}{lll} P &= \frac{1}{4\sqrt{D^2}} \sin \left( (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] \right) \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 2 (\phi \cos 4 \phi)] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\sin (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\cos (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\cos (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\cos (\phi - \xi) - [\Phi \cos 4 \phi] - 2i \\ &= \frac{1}{4\sqrt{D^2}} [\cos (\phi - \xi) - [\Phi \cos 4 \phi] - 2$$

and action.

$$\begin{array}{ll} \psi(\omega^2) = \phi(0, \operatorname{crist}) \circ f(\phi(0, \operatorname{conj}), \omega) \\ \psi(\omega^2) = \phi(0, \operatorname{cosh}, \operatorname{cosh}(0, \operatorname{conj}), \omega) \circ G(\omega) \end{array}$$

2 Фъ  $\mathcal{Z}=\mathbb{Z}^2$  of Section constraints

$$21 = \frac{1}{\theta \mathcal{D}} e^{2t} = \eta \mathcal{D} \| ^{T} x^{\theta}$$

In evaluation  $I_{i}(x)$  and  $I[\{(0)\}]$  is expending proving on the Birchins line j and  $j_{i}$  by  $j_{i}$  and depends priori term de form.

i when a' – ≃ Miethale Misia fundaon of a.

$$P(t) = \frac{1}{n \Delta t} e^{i N_{p}} = e^{i \mathbf{k} t} \int_{0}^{t} \mathbf{f}(t' - \mathbf{k}) dt'$$

and for walking  $p_{C=m}^{-1}V(v_{S}(n))$  (i.e., and i.e.

ji i:

5 When Albany uncluded:

$$P = \frac{1}{920} P$$

According to the parameters are operated and the right of Archenomic  $\Phi^{(0)}$ 

$$C = \frac{1}{6}X + \frac{1}{3}X + \frac{1}{3}XX + \frac{1}{3}XX$$

Septitura tradición pletex outra: Transpectó lis y ± 0 P = P

# 3.4 Two Other Methods of Finding P.I.

# 3,4,1 Method of Variation of Parameters

nte metros lo quita que en tano applica to equatio a sú malmat

$$\hat{\varphi} + ax + y = x \qquad \qquad z = 1$$

where this grows were threshold for all Eighers

$$\mathbf{p}_{A} = -g_{0} \left( \frac{\sigma_{A} g_{0}}{\sigma_{A}} d\mathbf{r} + g_{0} \right) \frac{\mathbf{y}_{A} \mathbf{x}}{\sigma_{A}} d\mathbf{x} \qquad \dots \mathbf{p}_{A}$$

where g(g) and  $g_{2}$  are the contact at  $x,y^{2}\in \mathbb{R}^{d}+dy\in\mathbb{C}$ 

K ďa

$$p_{ij} = \frac{|F_{ij}|^{2} |F_{ij}|^{2}}{|F_{ij}|^{2} |F_{ij}|^{2}} \text{ In stated the West extension } A_{ij}(A_{ij})$$

# Example 1.

Dangero Helber 5, viz stivil si paro trile 5, solve

$$y' = y = \cos x$$

### Solutions.

Given the relation in symmetric contribution  $(0.1 \pm 0.0) = 20.5 \pm 0.00$ 

(A) Transaction

From 
$$C = 1 + 0$$
  
 $C = 1 + 0$   
 $C = \pm i$   
 $C = C \cos x + c \sqrt{10} c$ 

der Teifra Mi

First  $V_{ij} = \cos(x_i) V_{ij} = 20^{\circ} \times 20^{\circ} M_{ij}^{-1} = 200^{\circ} S$ 

$$W = \frac{e^{x_1}}{|y_1'|} \frac{|y_2'|}{|y_1'|} = \frac{|x_1 \times x_2|}{|x_1 y_2|} + \frac{|x_2 y_2|}{|x_1 y_2|} + \frac{|x_1 y_2|}{|x_2|} + \frac{|x_2 y_2|}{|x_2|} + \frac{|x_1 y_2|}{|x_2|} + \frac{|x_2 y_2|$$

# 3.5 Equations Reducible to Linear Equation with Constant Coefficient

Thus, we shall still the distance of  $\omega_0$  along the structure a+t , is the variable of  $\omega_0$  by the mean t(t)+t is equation to the covariable form by a paging substitution.

au di Chinthy Ille er tellebum an

Aff Nijasia in Urganjan

$$Y^{\prime}\frac{(\mathcal{E}')^{\prime}}{dx^{\prime}}+k_{1}x^{\prime}+\frac{\mathcal{E}'^{\prime\prime}}{dx^{\prime}}\frac{\mathcal{E}}{dx^{\prime\prime}}\frac{\mathcal{E}}{dx^{\prime\prime}}+\dots+g_{p-1}\frac{\partial \mathcal{E}}{\partial x^{\prime\prime}}\cdots g_{p}=g_{p+1}^{\prime\prime}$$

such about the minimizant descriptions with service, well as  $m_{\rm c}$ 

 $\forall y > x : \forall y \ge x = y \cdot (\pi > x + x *_y *_z)$ 

Substitute the executes in given illerents, countries, in each trial near equation with y is sent secriticals. While using be solved as we described as

# Exemple 1.

Gots continuit therein, all countries  $\|v^{(i)}\|_{\partial u^2}^{2} + e^{i(t_i)}\|_{\partial v} = a_{ij} + a_{ij}$ 

whill expand a value of  $g(t) \in \mathbb{N}$  ,  $g(t) \in \mathbb{N}$  ,  $g(t) \in \mathbb{N}$  , we consider a distributed the differential consider g(t)

$$(0.10^{-10.5})^{-\frac{4}{10.5}} \frac{dx}{3}$$
 (ii)  $0.78 \, \mathrm{m}_{\odot}^{-10}$ 

Solution: (a)

$$\frac{e^{i\phi}y}{dx^2}*\lambda\frac{\partial x}{\partial x} + \lambda\frac{\partial x}{\partial x} + 2y = 0 \text{ and } y(0) = 0, y(0) = 1.$$

Discrepance is less the initial condition as we has country, as all gas, given as

Siller unon rid llereran equation

$$\frac{3^{2}}{N^{2}}\frac{d^{2}y}{dx^{2}} + \frac{d^{2}y}{dx^{2}} + 2y = -2 \times 5 + -\sqrt{5}x + 4x^{2} + 0$$

$$= -2 \times 5 + \sqrt{5}x + 4x^{2} + 0$$

$$= -2 \times 5 + \sqrt{5}x $

# Aheriate Solutions

$$x^{3} \frac{d^{2}y}{dx^{2}} + y \frac{dy}{dx} + 4y^{2} = 0$$

$$(x^{2} \cdot D + xD + 4)y = 0$$

$$(00 \cdot 1 + 8 \cdot 4)y = 0$$

$$(00 \cdot 1 + 8 \cdot 4) = 0$$

$$(00 \cdot 1)y = 0$$

$$\varphi = (C_1 + C_2 + C_3 + C_4 + C_4 + C_4 + C_4 + C_4)^2 = G \cdot \left[ -(G_2 + C_4)^2 + C_4 + C_5 + C_$$

One of the independent  $x \not \in \mathbb{R}^n$  on  $x \not \in$ 



# Prenious GATE and ESE Quescions

Q prompt group in the college of accordance

$$\frac{\partial x}{\partial x} + y^2 = 0.86$$

$$100 \times \frac{3}{1 - 6}$$

$$d\hat{\phi}_{ij} = \frac{-e^2}{\pi} + 2i$$

ljur wikelden seguaten brist i noor

TME GATE 8003 2 marks)

Újíží (řístjenst rohetem členostjene o empound nodny) concentration (a) can be included as exist, an a without arterum a covariant  $\frac{\partial u}{\partial x} = u(x) = 0$  where It is the repotent row constant. For a proof of  $\Gamma$ the sear for of the obtailor is:

$$\begin{aligned} \langle z \rangle &= z \, z^{-1} & (b) \, \frac{1}{z} \, \frac{1}{S} \, z^{-1} \, S \\ \langle z \rangle &= c \, z^{-1} \, (-c \, z^{-1}) & (d) \, z = g + k \, z \\ &= \left[ \text{CF-GATE-2004}, \, 2 \, \text{marks} \right] \end{aligned}$$

QA. The 3d owing it flerest at legicality has

$$\left|\gamma\right|\frac{\sigma^2 \sigma^2}{\sigma^2} = \epsilon \left[\frac{\sigma \sigma^2}{\sigma^2}\right]^2 + \gamma^2 = 2 + \epsilon$$

- Into a control  $\Rightarrow x_1$  from  $x_2 = 0$
- (()) гераа + Госог = S
- (c)  $\operatorname{degree} = 0$  and  $e_i = 0$
- (0) -like aa = 0 and a = a

TFC: RATE 2000 T mark!

 $\mathbf{Q}_{i}$  . The all time that we occur in elects,  $\mathbf{e}_{i}$  is i .

$$Z(f) = -3x(f), \ d(f) = 1/2.$$

$$\begin{split} & \langle \sigma_i^* \rangle \cup \langle \sigma_i^* = \sigma_i^* | \sigma_i^* \rangle & = \langle \sigma_i^* | \sigma_i^* \rangle - \langle \sigma_i^* | \sigma_i^* \rangle \\ & \langle \sigma_i^* | \sigma_i^* \rangle = \langle \sigma_i^* | \sigma_i^* \rangle & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle & = \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^* \rangle \\ & = \langle \sigma_i^* | \sigma_i^* \rangle + \langle \sigma_i^* | \sigma_i^*$$

$$\phi(x,y,t) = y_x \cdot \mathbf{e}^{-xt} + (t \cdot t) \cdot t \cdot t + x \cdot t$$

ES. SAND 2005, 1 mark?

 $Q_{\rm e}S$  . The parameters for inequalities by  ${\rm supp}(1,1,0)$ z − vî i "itlinis equatic

$$\frac{d\rho}{dr} = \rho Q (r + \epsilon \rho T p) \quad \theta > 0 \text{ (a) Be}$$

$$(\frac{1}{2}(\frac{n^2s}{n^2}+\frac{1}{2}(n-n)))s=(1-1)^2(\frac{n}{n})$$

$$\langle E\rangle \frac{\partial w}{\partial t} = \left(1 - \eta(\partial x), \ t\rangle + \beta(t)$$

$$|u_{i}^{n}| \frac{2^{n}}{2^{n}} = (1 - 20)(n + 2^{n} + i^{n})$$

$$(x) \left| \frac{\partial \mathcal{L}}{\partial x^2} \right| + (1, \dots, n) dx = (1, \dots, n) dx$$

[CE GA/L 2005 2 marks]

Q.9. The solution of 
$$\frac{\sqrt{|\phi|}}{|\phi_0|} = 2\frac{d\phi}{d\phi} = 27$$
,  $|\phi_0| = 2$ 

$$\left|\frac{\partial f^{\prime}(\pi)}{\partial x_{i}(x_{i})}\right| = 0 \text{ in the notice } 0 \text{ at } x_{i} \leq \frac{\pi}{2} \text{ is given by}$$

$$\langle \mathbf{a} \rangle = \left( 2 \nabla \mathbf{a} \cdot \mathbf{b} + \frac{1}{4} \nabla \mathbf{b} \cdot \mathbf{b} \right).$$

$$\left(\left(1, q\right) \right) \leq 2 + \left(\frac{1}{2} \operatorname{sin}(1)\right)^{\frac{1}{2}}$$

$$|g(t_{\rm B},0)|\cos 4x + \frac{1}{4}\sin x$$

(CE, EACHERSONS Prinarke)

Glalamoni for i invertiA lewer Questions 7 and 8 the complete and view of this undirected therefore any tolk a

$$\frac{2^{2}}{\sqrt{r}}r + i\frac{2r}{2r} + \sqrt{r} = 0 \text{ if } k_{1} \gamma = 0 \text{ if } k_{2} \gamma = 0 \text{ if } k_{3} \gamma = 0 \text{ i$$

Q7 The cardoans

(a) 
$$\phi = 3 \cdot \zeta = 5$$

(a) 
$$\phi = 3$$
,  $\gamma = 5$   
(b)  $\phi = 4$ ,  $\phi = 9$ 

$$-\rho d (\rho + 2 - \gamma - 4)$$

(ME, GALE-2005, 2 marks).

O.B. Which ideas to be the second as a solution of the

we describe detailed 
$$\frac{g^2v}{g(x)} = \rho \frac{g(x)}{g(x)} = (g(x)) + 0$$
 .

- $(24.0\pm2.0)$
- ज्या और

IME, GATE SCOR, 2 morks;

0.9 Applicant the Mooning different absolution is

$$|\xi_i(x,y)| \le \frac{e^{2\delta}y}{e^{-\delta}} = 3\frac{e^{i\phi}}{e^{i\phi}} = 0$$

$$(\hat{p}^{(i)})^{(j)} = \hat{\theta}^{(i)} = \pm \hat{p}^{(i)} = (\hat{p}^{(i)})^{(j)} = \hat{p}^{(i)} = \hat{p}^{(i)}$$

$$(\hat{g}_{i},\psi-\sigma_{i})^{2}=g^{2}, \qquad \hat{g}_{i}(y)=g^{2}(y-\phi_{i})^{2}$$

FC, GATE-2008, 1 mark).

Q 10 A seller collection material straket sell to the TTG killer a lesse volume allo rava principilis alla si to its ing so we would burilded them also be expending in that if fixing amount of the ball is  $20\,\mathrm{ms}$  and the districts with the significant gases Similar, Jie policomplete de conserva en la

- (d) Cimoral si
- Voi 9 montani
- (c) is πoπίδα.
- Alterbase in c

[CF, CATF-2006, 2 marks]

5-11 The solid of the directable equation

$$\frac{G_{2}}{4m} + 2g_{2} \approx 6 + 2g_{1} \log \log (6) + 2g_{2}$$

- $(z_{i}(1))\dot{\phi}^{-i} = -(z_{i}(1))\dot{\phi}^{-i}$

0.18 For  $\frac{\sigma^2 t^2}{\sigma^2 t^2} = 4 \frac{\partial f}{\partial x} + 3y = 30^2 t$ , the particular  $i^{10} e g t^{10} s$ 

- $an_{-\frac{1}{N}} s^{\frac{1}{N}}$

- ಗಲ್ಲಿ ದಿನ್ನ ದಿನ್<del>ತಿ</del>

IMF. ØATF-2008, 2 marks

O. S. If it degree of the prilicipation adulation

$$\frac{e^2\lambda}{e^2}+2(2e^2+0.51$$

- oct if

CF, GATE-2007, 1 mark

= 0.14. The solution of the differential countries  $\frac{d^2}{dz}$  ,  $d^2y$ 

with the condition that you take you do

- $|V| y = c H \qquad (v) |v| v = \frac{A}{3} C$
- $\langle x \rangle \cdot \gamma (x) = \frac{y^2}{2} \qquad (x) \cdot \gamma = e^{\frac{y^2}{2}}.$

ICE GAIE 2007, 1 mark)

 $\Theta$  15. Properties of  $\langle \psi_i | \psi_j | \psi_j \rangle$  in telluring  $\langle \psi_i \rangle$ and refer limited in to you

- (5) # 5 x 5 x 1
- (FA mass est s
- District Land
- $I(1) = 2 \times 2 \times 2 \times 2$

IME, GAIL 8887, 5 minus.

Qu18 A body originate at 80 rd cases how the 5000 N ilo Tituros water karalla alla temperatura oli  $5790~\mathrm{Mpc} \mathrm{m}^{-1}\mathrm{He}$  the temperature of the people of Ineletic of CU tripaloc?

- (pr. 30.2°C
- (a) 5, 5%)
- 15: 38,700
- ...I; 15-7

[CE, GAIL 2007, 2 marks]

0.47 Set upon signal  $\frac{\partial F}{\partial x_0} = -\frac{a}{a} |a_0| c = 1$  and  $y = \sqrt{g} |a_0|$ 

- $\begin{array}{ll} (6) = -1^2 + -2 & (6) (1 + y) = 4 \\ (6) (3 + y^2 + y^2) = 3 & (5) (2 + y^2 + y^2) = 3 \end{array}$

ISE, SA15-3008, 2 market

0.18 through the Webwing is a solution to the

d #crontal equation 
$$\frac{\partial \omega(t)}{\partial t} = 0$$
 (2) = 0.9

$$|(q_{1,2}^{*}(t))| = -\frac{3}{2}t^{\frac{1}{2}}$$
  $((0), a, b) = 3.54$ 

IEC, GATF-2008, markl.

Q.13. The general solution of  $\frac{d^2y}{dx^2} = y = 0.0$ .

(c) 
$$f = F(\cos x) + G(x) + x$$

- 1017- CORT
- $\mathbb{I}_{\mathcal{N}}(v) = \mathbb{P} \times \mathbb{P}[v]$
- (a) v ∂ar<sup>©</sup> ·

10F, 0ATE-2008, 1 mark1

 $\subseteq 20$  Given by  $F: F: F \subseteq C$  and A(F) = 1 with  $F \subseteq C$  with

- (-1,-3,20)
- (e) U 13
- ea nha
- 100 036

TMR. GATE 2008. 1 mg/kj

 $\mathbb{Z}/21$  , is given by  $(x^*, x^*) + y = 0$  ,  $(X = 0, X^*) \in \mathbb{Z}$ 

- When  $i \approx \gamma (0.004)$
- (56.5)
- **山道关系**
- sar 0.025
- 4ŋ : 13

ME, SA, 0-2008, 9 ma kali

5.99 ha problem of the call around the governor

$$\frac{\partial^{N} f}{\partial t^{2}} = \left(\frac{\partial f}{\partial t}\right)^{N} = y^{N} = x^{N} \cdot x_{1}$$

- ic! 2

| (m 2 | 00 ° |µU GATE-2009 1 mark

p.23 Selution of the difference requality.

- $(2\sqrt{\frac{2}{2}})_{1\leq 2\sqrt{2}}$  . The approximate of the classic
- ist enitials.
- (c) parabolas.
- gji ng ⊭d 44ta

[QF. GATE-SCCS, 2 marks].

OLSA MEDIT LISTED WITH SMALL this soles. THE SIZER F мижен избертое солов gwon verwi (н. la N

- $A_{0} = \frac{\partial V}{\partial u} = \frac{V}{\lambda}.$
- $g_{ij} = \frac{dV}{dt} = -\frac{V}{dt}$  2. Straightfeach

$$\Pi_{i} = \frac{\partial D_{i}}{\partial x_{i}^{2}} = \frac{1}{2\pi}.$$

ಿಸಿ. ಈ್ಯಮಿ ಮುಂಬ

$$D = \frac{\partial y}{\partial x} = -\frac{1}{y}.$$

Q.85 The coupling  $|x|^{\frac{2N}{2}} + y = e^{1/2} \text{ with the } 0.0 \text{ His}$ 

$$g(t)=\frac{h}{h} \triangleq$$

- $|g_{i}|_{\mathcal{F}} = \frac{A}{2\pi} \left( \frac{1}{2\pi} + \frac{1}{2\pi} \right) \left( \frac{A}{2\pi} + \frac{A}{2\pi} + \frac{A}{2\pi} \right) \left( \frac{A}{2\pi} + \frac{A}{2\pi} + \frac{A}{2\pi} + \frac{A}{2\pi} \right) \left( \frac{A}{2\pi} + \frac{A}{2$
- $|g_{ij}| \leq \frac{r^2}{5} \cdot 1$   $|G_{ij}| \leq \frac{r^2}{5} 1$

| Ma, G4TE-2009, 2 marks|

Q.28 Treatment and coprectof \$ € 1 Hemotic equation.

$$\frac{\alpha^2 v}{\omega z^2} + 4 \frac{\sqrt{-\alpha} e^{x \alpha}}{q_{1, a, b, c}} \cdot |s|^2 = 0 \text{ and } \alpha \text{ approximation} \gamma$$

- tar 3 and 2
- this Stand C
- $\hat{\rho}(t) \in \mathcal{P}_{k}(t) \setminus \hat{\mathcal{P}}_{k}(t)$
- ear Cland 1

(CC, QATF-20, 0, . mark)

Q 97 The Bases eq.  $2 \ln \left( \frac{e^{2\alpha}}{2\pi^2} + \frac{e^{\alpha}}{2\pi^2} + 0 \right) > 8$ 

- ia) second of the contract aromary differential
- (g) third taken has had not overlaight 16 family equation.
- (g) print also Instructions are differently constant idi mikee eider niit i vor ordnis kiellle en sti  $\rightarrow$  1.0  $^{\circ}$  2.3  $^{\circ}$

IME, 这ATE-2010, 1 minsk

Quantity on the first and are only exist a compa-

$$\frac{g^2 y}{a^2} + \frac{dy}{dz} = 6y + 6d5.$$

- $(a_1)_2 = a_1 e^{a_1} + a_2 e^{-b_2}$
- $\langle \psi_{i}^{+}\rangle_{i}=\langle \psi_{i}^{-}|\psi_{i}\rangle_{i}+\langle \psi_{i}^{-}|\psi_{i}^{-}\rangle_{i}$
- $(y_i)_{i=1}^{N} = (x_i \in \mathcal{X} + \Delta_i, x_i^{N})$
- ಚಿತ್ರ ಕೃತ್ತಿದ್ದರೆ ಇತ್ತಿದ್ದಾರೆ.

(CE, IAA) E-2010 | 2 merks) |

0.20 By the ofference og sitter  $\frac{d^2 v}{dt} + g \frac{d \lambda}{dt} + g_{0,1,1,0}$ with other constraints  $c(\hat{\theta} - 1)$  and  $\frac{\partial \hat{\theta}}{\partial t} = -c$  .

😩 🧿 របស់ Linction អាក្នុងមានខែសម្រាស់ ភាពសម្រាស់ 🛶 👍 ភូមិត្រ

$$\frac{\sigma^2 N(\epsilon)}{\epsilon^{2N}} = \frac{\sigma(\lambda)}{\epsilon^{2N}} = 0 \quad \text{of the alternative } A = 0 \quad \text{if } A = 0 \quad \text{in } A = 0 \quad \text{of } A = 0 \quad \text{if } A = 0 \quad \text{of $

boundary constitution are propagate X and  $X^{(n)} = 0$ . Die zo chor loitht spacinije

$$(0, -4\gamma) = \gamma, (0, p), (0, p)$$

$$(b) \times [x] = e_i \operatorname{tr} \varphi_i^{(i)} \operatorname{loc} A_i^{(i)}$$

$$\mathrm{IS}(|A_i^n A_i^n|) = \mathrm{K}^n (\mathrm{graph}_{i=1}, \mathbb{Z}_+^n)$$

$$(0) \ \mathcal{L}(x) = \mathbb{K}[\lambda \gamma_1 (-\infty)]$$

PC. CATE 2010, 1 mark?

 $\Omega$  31 Outsport to different electron  $\frac{\partial v}{\partial x} = \left[ \log v \right] v$ . line gode a fall i siraj, iggagga

$$(a_1, c_2 + a_3 \frac{x^2}{2} + a_3 a_2)$$

$$(x)/y = \cot^{-1}\left(\frac{x}{2} + y\right)$$

$$\langle r \rangle \left[ y - 8r^{\frac{1}{2} - \frac{2}{2}} \right] \cdot a$$

$$\hat{\sigma}[\hat{p},\hat{p}] = \text{for} \left( \frac{d^2}{dt} + p \right)$$

IMF, CATE-2011, 2 markst

**Q.22** With Aleckic Salx et all the solution previolety: the instantal differential equation  $\frac{20}{20} \pm \sqrt{20} \approx$ 

$$(20 - \frac{1}{2})^{2/3} = 6 \qquad (20 - \frac{3}{2})^{2/3} + 6$$

$$(31 + 3 + 3) = 16$$
 (3)  $-3 + 3 + 3$ 

IES. GAYF-2011, 1 (12/4)

 $|9.33\rangle$  , a solution in the differential solution  $\frac{39}{20}=950$  $6901 \pm 48.8$ 

$$(G) \cdot k = k \cdot k \cdot \Phi \qquad (G) \cdot g = (kg)^{2}$$

$$(d) \ \forall = c^{-\alpha} \qquad (d) \ \forall = c^{-\alpha}.$$

[EC. SA:= 2011, 1 mera]

524 The solution of the differential equalities

$$\frac{d\lambda}{dx} = \frac{a}{x} = a$$
, with the condition from  $a = 1$  at  $y = 1$  at

$$||g_{n}^{2}||^{2} = \frac{9}{3}, \quad \frac{9}{3}, \quad ||g_{n}^{2}||^{2} = \frac{9}{3}, \quad \frac{1}{9}$$

$$|g(y)| = \frac{2}{3} + \frac{2}{3} \qquad |g(y)| = \frac{2}{3} + \frac{2}{3}$$

[CE\_GATE SUIT, 2 marks1

0.88 The pprox (for orthopromaty after a field  $_{
m H_2}$   $_{
m dist}$ 

$$\frac{dt}{ds} = 2t^2 + 0$$
 for 1 dipolinosity condition  $|y \perp z|_{\Delta t}$ 

$$(x,y=2e^{-t}$$

[DF\_GATE-2018, 3 merks].

**Q.36** With Michael that  $\mathbb{A}[1] = 0.5$ , the solution of  $\mathbb{A}$ 

differential action of 
$$-i\frac{d^2\omega}{dt} = \mathbf{v}(\mathbf{u})^{\dagger}$$
 is

$$|a_0^*| > -1 \le \frac{1}{2}$$
  $|a_0^*| > -1 - \frac{1}{2}$ 

(a) 
$$z = \frac{1}{z}$$

$$||\sigma\rangle| > \sigma \left(\frac{1}{2}\right)$$
  $||g\rangle|_{0} = \frac{1}{2}$ 

[FC, EC, IN GATE 98 5, 1 made]

Q.37 Traperto dilla an ella cia gir

$$\frac{dS}{dt} + e^2 \frac{dt}{dt} = \frac{S_{11}}{2t^2} \cdot i_1 \cdot 0$$

- (a) The arcouption of Malak 2.
- () ў полніцьки відцерог оголості.
- (c) Incal equation of previation
- (dunan Incorpsy with Linguyer⊇)

1MF\_CATE-2012, 1 Mark)

Q.98  $\Pi$  =  $_{\mathrm{S}}$ po of the same infiltering equation

$$\frac{\partial^2}{\partial t} = \frac{\partial^{2n}}{\partial t^{2n}} \cdot q.$$

ta) Escapyigo

[[t]] = 0 and

301 Non-incar.

FN. GATE-2013 : 1 morkt

Q(90,T) w solution to the  $(1+\epsilon +\epsilon \epsilon)$  obtains

$$\frac{d^2\omega}{dx^2} = 0 \frac{d\omega}{d\omega} = 0 \text{ is whise as identification of } 1$$

in the countary condition  $\mathbf{a}_{n}(0) = \mathbf{0}_{n} \oplus_{\mathbf{0} \in \mathbb{N}} \mathbf{a}_{n}(0)$ 

(a) 
$$u = U_1^{2}$$
 (b)  $u = U_1^{2} \frac{1 - e^{2u}}{1 - e^{2u}}$ ,  
(c)  $u = U_1^{2} \frac{1 - e^{2u}}{1 - e^{2u}} \frac{1 - e^{2u}}{1 - e^{2u}} \frac{1 + e^{2u}}{1 - e^{2u}}$ ,  
[MF. CATE-2015, 2 Varks.]

Q 20 T ∈ mesimic ikolometian sekreti union the difference logication  $p(\theta * \phi(\theta)) = 0$  with infig.

- $c \circ n \circ (c \circ n) \circ (c \circ n + 1) \circ (c \circ n) \circ (c \circ n + 1) \circ (c \circ n) 
- is the
- ii ii na

- C 41 A system described by a linear consists  $\cos\theta^* = -\frac{1}{2} \cos^2\theta + \frac{1}{2} \sin^2\theta + \frac{1}{2} \sin^2$ pous, or resign chap, so of an given by  $p(\hat{g}, loc)$  $a \times 0$  when the lensing tunetion to war and the initial senei de la Môg. Il projektibas to mes la tregagger typ (bg. the gold god her omes #2519 for to Cuse need to
  - ia, at angentic talle, condition to 1993 and the Amingfunction (20)6.
  - $\psi \hat{n}$  change the initial condition in 2 imes 0 and the ronding rungston for lines.
  - Tak shanke the initial constitution  $\mathbb{R}^{\frac{1}{2}}\mathbb{C}(\mathbb{C})$  and the latency bias, and a  $\sqrt{2}\,v_{c}^{\mu}$
  - property in the property of the property of the torer altanoibility Evid.

[EC, GAIE 2018, 2 Varks].

**Q.48** The map with matthe inconsesses  $\frac{d^2 r}{dr} = 3x - xy$ 

and 
$$\frac{e^{i\phi}}{i\delta} = 4a + 8\mu/6$$

$$(a) \frac{\sigma}{\sigma!} \begin{cases} v_1^2 & \begin{bmatrix} 0 & -\delta \end{bmatrix} \\ v_2^2 & 4 & 6 \end{bmatrix} \begin{cases} v_1 \\ v_2 \end{bmatrix}$$

$$g \in \frac{\mathbf{a}}{|a|} \begin{bmatrix} a & b & b \\ -1 & -1 & -1 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix}$$

$$\lim_{t \to 0} \frac{|u|^{2(t)}}{|u|^{2(t)}} = \left| \frac{2}{u} - \frac{5}{3} \frac{|u|}{2} \right|$$

$$\sinh \frac{d^{2} \ln (1 + \frac{1}{2} 4 + \frac{8}{48} + \frac{x^{2}}{y^{2}})}{dx^{2} \ln (1 + \frac{x^{2}}{2} + \frac{x^{2}}{2} + \frac{x^{2}}{y^{2}})}$$

[ME, SATE-2014 : 1 Mack].

C.42 Tub general saturation of the cities at its section on

$$\frac{dx}{dx} = (a \times b + y) + a x^{1/2} + 0 = 0$$
 constant is

$$g_{N}(y+y) = 1 + 1$$

$$(x)^{-1/2}\cdot\left[\frac{e^{\frac{1}{2}}\cdot v^{2}}{v^{2}}\right]=v-\eta.$$

$$\log |\cos|^2 \frac{\sigma + \rho}{\sigma} \Big| = x - \epsilon$$

$$((0)) \exp \left(\frac{(x+y)}{x}\right) = x = x$$

[ME, CATE-2014 | 2 Marks]

247

0.44 indispliction of the reliable between

$$\frac{\partial \phi}{\partial x} = \exp (y - x) \partial x + e^{-x} + 6$$

- $(c_1^{\alpha},1)(c_2^{\alpha})^{\alpha} \qquad \qquad (c_1^{\alpha},2)^{\alpha^{\alpha}}$
- á i lite<sup>sé</sup>
- 11: 33:

TME, GATC-2014 : 1 Merk\*

O 45 Which ONL or her browing is a linear title १७०१ १९६५ इ.स. हे स्ट्रांसिक में अंतर के प्रतिकार के भी yere he i dependentant apparation totalibs. seane that you

$$\langle g \rangle \frac{\partial g}{\partial x} |_{x = 0} = x - 1 \qquad \langle g \rangle \frac{\partial g}{\partial x} = x x - 0$$

$$\lambda = \frac{\partial r}{\partial r} \mathbf{A} \cdot \mathbf{c} \mathbf{c} = \mathbf{c} \cdot \mathbf{c} \cdot \mathbf{c} \cdot \mathbf{c} \left( \mathbf{c} \right) \cdot \frac{\mathbf{c} \cdot \mathbf{c}}{2 \sigma} + \mathbf{c} \cdot \mathbf{c} = 0$$

FFC\_GATE-2014 . 1 Morkil

O.48 The column for the differential emission

$$\frac{\partial^2 x}{\partial x^2} = 0.0$$
 which is specificate  $\epsilon(0) = 1$  and

$$\frac{dr^2}{dt} = -is.$$

$$\lim_{n \to \infty} |\beta| = 1 = 1 \qquad \qquad \lim_{n \to \infty} \|\beta\| \otimes 1 + n + \frac{1}{n} \cdot 1 \otimes \beta_0 - \frac{2}{n}$$

$$\label{eq:problem} phi(\frac{1}{8}|\mathbf{c})/\mathbf{b} = \text{max} \, \theta = \{\text{theorems} \, | \, \text{if} \,$$

ILL GATE-2014: 1 Meral

Q.47. The Spaces as also as g(t) = g(t) and g(t) = g(t)

of the oriented those, the  $\frac{G^{2}(A,C)}{A^{2}}$  ,  $\chi_{a}^{a}(t)=0$  ,  $A^{a}(t)$ 

$$a(c) = st(a_2 = 0, \frac{2b_2(t)}{a^2 - 1})$$
 . The Whene can

Qu48. If the pharacleristic equipment of the atterement

equation 
$$\frac{d^2x}{dx^2} = 3 \ln \frac{dy}{dx} = y = 0$$
 Take two lengths

roces, thich that you had all a fine

- $\underset{i \in \mathcal{I}}{\otimes_{i}} = 1$
- (5) (0, 0

'FC, CATF-2014 : 1 Mark1

 $0.49^{\circ}$  [NH is used to some the investigations call than

militar Briania spatia 
$$\frac{d^2 \pi}{dt^2} + 2\frac{d\pi}{dt}$$
 ( $x = 0.0$ )

Q.50 Okirx Let 1. digitaria del

 $x^2 \frac{d^2y}{dx^2} + y \frac{dy}{dx} + y = 0$ . When of the roll being its

- a solution to this or promote could on to 14.8 GS

[FF, CATF-2014 : 1 Mark]

Q.b.1. Consider the following informative series in a

$$\frac{\partial r}{\partial t} = -2 g(r)$$
 if we expect the  $g = 2 g(r) = 0$ 

- the value of viol  $t=3^\circ$  s
- (e) ce 1
- $\hat{\theta} \in S = \mathbb{R}^{d}$

'ME, CATE-2015 : 2 Marks'

≅.L2 ucrs cor to latavire difference e pre, you

$$\sigma(y) T^{\frac{1}{2}} = \Delta T f(t) \theta(\frac{1}{2}) \cdot \left[ y \left( \tau \right) (y - y_0) v \right] y + \frac{y}{2}$$

With the Mowe are help been that to above COLORO (a. x and x being y y x y y

- $\eta_0^{-1} = 2 \otimes \frac{\lambda}{\lambda} = 0$   $\eta_0^{-1} = \frac{\lambda}{\lambda} \otimes \frac{\lambda}{\lambda} = 0$
- $\hat{g} = \operatorname{dist} \frac{P}{2} = G \qquad \quad \left\{ |g_{ij}| \neq 0 \text{ if } i \right\}_{i=1}^{N} = i^{2}$

TCE: CATE-2015 : 2 Marks)

Q 56 Core for the following second proof income dilla en sherretori

$$\frac{(a^2)^2}{\sqrt{a}} = -300^2 - 9a_1 - 950.$$

The concluyer of in some any it year god.  $1 - 2 \cdot p - 21$ 

The value of v or v = 1 is \_\_\_\_\_\_

[CI, GATE-2015 : 8 Marks)

G.54 Action consequence  $\frac{dt}{dt} = J \Delta t = 0$  is apply table

even to size to 110/4 = 10, then 0.5 is \_\_\_\_\_ TEE, 3ATR-20\S , 2 Mer⊷1

0.88 The general solution of the offerential  $g_{\rm LM} \gamma \gamma$ 

$$\frac{\sigma_2}{\sigma_1} \geq \frac{1 + \sigma \sigma_2 \sigma_2}{1 + \sigma \sigma_2 \sigma_2} \cdot j \,.$$

- (a) (a) (c) (c) (c) (c) (c) (c) (c)
- (a) is the angle of (interest state)
- (a) the  $y + \cos x + \cos x$  a constant,
- (c) (an x), (an y + a) a (a a constant)

REC. GATE-2015 . I Mork

Q 56 A self-icondition of any offerental equation

$$\frac{\partial^2 y}{\partial t^2} + (1 \frac{\partial y}{\partial t} + (y + t) + a \cdot s) t^{2\alpha} + b \cdot a \cdot y(0) + 2 \cdot a \cdot d$$

$$g(t) = -\frac{1.95}{c^2}$$
. The value of  $\frac{(9^2)}{c^2} (9^2) \epsilon = \frac{1.00}{c^2}$ .

IEE GATE-2015 ; 2 Marks)

0.57 The Kaluron of the dilectralial decision

$$\frac{1}{m^2} - 2\frac{dy}{dt} - y = 0 \text{ with } y \in \mathcal{Y} = y' \cdot f(t) = 0$$

- (a) (2 95°)

LC. SAIE 2016 | 2 Warks]

Q 55 Consider - His - differential industrial

$$\frac{\partial^2 \phi(t)}{\partial t^2} = \frac{\partial \phi(t)}{\partial t} + 2 \sin(t - 2t) + 3 \cos(t - \sin 2t) = -20$$

z distributed who die z > 19 the value of 112 6

[FC\_GATE-2015 : 2 Mai/s]

2.58 find the xy , iyy of  $\frac{y^2}{x^2} = y$  which has zero

Let 
$$Q = S$$
 be given the part  $\left( 2^{n} L_{\frac{1}{2^{n}}}^{\frac{n}{2^{n}}} \right)$ 

$$(\underline{x}_{i},\underline{y})=\frac{1}{2}\mathcal{C}^{*}-\mathcal{C}^{*}\qquad \quad |\underline{y}_{i},\underline{y}|=\frac{1}{2}(\mathcal{C}^{*}+\mathcal{C}^{*})$$

$$g(\|y-\frac{1}{2}\|c^2\|) < 2$$

$$(\phi) > -\frac{1}{2}(\phi') > \frac{1}{2}(-\phi') = (\phi) + \frac{1}{2}(-\phi') + \frac{1}{2}$$
  
[MI], CATZ-2015 : 2 Merkel

 $\mathbb{Q}(60,a$  Landing v(a,b,c) into v(b)=1 and v(b)=3cigny sight nor did the differencial explorion.

$$\frac{e^{2A}y}{e^{A}} + 2\frac{e^{A}}{e^{A}} = y + 6 \cdot ||y| + 9(2) \cdot 4.$$

[FF\_QATE-2016\_1\_Valk]

I(JR). The solution of the differential declarer, for  $I \times U$  $y^2(f) + 2y^2(g) = y(g) + 0$  with the conditions Z(0) = 0 and Z(0) = 1 to (0,0) convex A = -1. 9/30/01/01/09(0

 $Q_032 = g/r(1+r)$  extra profit existence operator

$$\frac{d^2 x^2}{dx^2} = \frac{1}{2} \frac{dx}{dx} + dy = 0 \text{ with infinite sort offer } x_{\phi}(0) = 0.$$

| art. | 
$$\frac{dy}{dy} \Big|_{t=0}^{t=0}$$
 | then the value of  $(y, 0)$  is \_\_\_\_\_.  
| FFR, MA\_ =-2015 : 3 Marks!

೦ ರು Tenanciar supporting intelled Horsela g van belawia

$$\frac{d^{2} h}{dx} = 12 \frac{dx}{dx} + 30 x = 0 \quad \text{and} \quad 0.05 \quad \text{a.s.} \quad \text{and} \quad$$

$$\frac{\Delta b}{\partial a}\Big|_{a=0}=\pm ba\,.$$

- (v) (C Taryera)
- (a) (b) 10 (b)  $e^{-it}$  (c) (b)  $-ie^{-it}e^{-it}$ (c) (3 12 (c)  $e^{-it}$  (c) (3 12 (c)  $e^{-it}$ 
  - [DD: CATE-2018 ; 2 Medical]

3.64 if y = f(x) castles the boundary value problem.

$$y^{-1} \leq y = 0 \quad y(0) = 0 \quad y\left(\frac{y}{2}\right) \leq \sqrt{x} \quad \text{The } \left(\frac{y}{2}\right) \in \mathbb{R}$$

ME GA E 2016 : 2 Marks<sup>1</sup>

**QUEST THE LEGISLA** WELL HAR A THE THE STREET MATERIAL it which are by with ultimating a perfect the outlier. 라호cd lie ambiatusere:

$$\frac{\partial^2 v}{\partial x^2} + 3\frac{\partial^2 y}{\partial x^2} = 30 \text{cm}^2 A^{-2}$$

sain 
$$[x_1 - x_2x - x_3]$$
 on  $d(x_1 + x_4]$  expectate  $[x_1x_2 - x_3x_3] = 0$ .

(b) 
$$[a_1 - a_2 + a_3 + a_4 + a_4 + a_5 + a_5 + a_4] + a_5$$

(b) Let 
$$\Gamma_{\alpha}$$
 be  $\Gamma_{\alpha}$  be  $\Gamma_{\alpha}$  be a constant  $\Gamma_{\alpha}$  of  $\Gamma_{\alpha}$   $\Gamma_{\alpha}$   $\Gamma_{\alpha}$  be  $\Gamma_{\alpha}$  .

SE GATE 2316 1.5 Market

Q 66 C made in the differential contribution  $S^{*}C(x)$ ??yij-1 - 1 with in the conditions vius = 3 and  $\Psi(0) = 2000$ . To value of  $\gamma \sin \phi + i\phi$ TME, GATE-2017 : 2 Marks)

Q.67. The different shear short  $\frac{\partial^2 y}{\partial x^2} = 16y + 5 \cot y(x)$ 

who into two counts a conditions  $\frac{\partial x}{\partial x} = \frac{1}{a}$ 

and 
$$\frac{\partial y}{\partial x_{2,2}} = -120$$

- ya) ing solution.
- An excellative enriques
- (a) evasty one solution.
- (a) infinite on pay solutions.

[NF, OATF-2017 : 1 Mask

Qig0 (Jansiner in the lotterential equation)

$$\hat{g}^{-1} = 8 \cdot (\frac{2 \hat{\varphi}^{2}}{\hat{\varphi}^{2}} + 5 \cdot \hat{\varphi} + 6 \cdot \hat{\varphi} + 2 \hat{\varphi} + \hat{\varphi} + 2 \hat{\varphi} + 1 \cdot \hat{\varphi} + 2 \hat{\varphi} +$$

constitution in the property of the second stage and the second stage and the second stage are second stage a м на по наседа to the Incorati

- (a) (-2° 21°
- (51) 2, 30
- (a) (±10, 2).
- (8: (0:10)

[EL, GATE-2017 ; 2 Marks]

Q.58 This general explicit for all held forcing equations

$$\frac{d^2 \lambda}{dx^2} + \lambda \frac{\partial P}{\partial x} + \frac{x}{2} y = 0.$$

in forms of the two-probabilities  $\kappa_{\rm p}$  and  $\kappa_{\rm p}$ 

$$|p\rangle = e^{\left[1+i2\phi\right]} + |x_{0}|^{2} + \exp i$$

$$\|\hat{\mathbf{L}}_{\mathbf{k}}\| \simeq e^{(1+\epsilon \Delta) x} + N_{\mathbf{k}} e^{(1+\epsilon \Delta) y}$$

$$\widehat{f(g)} = \operatorname{const} \left\{ -2\Phi(\mathcal{H}) \mu_{i} + \operatorname{const} \left( -2\Phi(\mathcal{H}) \right) \right\}$$

$$\inf_{i\in I_1} \sup_{n\in I_2} \inf_{i\in I_1} \sup_{j\in I_1} \inf_{i\in I_2} \inf_{j\in I_2} \inf_{i\in I_1} \inf_{j\in I_2} \inf_{j\in I_2} \inf_{j\in I_1} \inf_{j\in I_2} \inf_{j\in I_2} \inf_{j\in I_1} \inf_{j\in I_2} \inf_{j\in I_2$$

150 (BATE-2017) 1 MARKI

3.70 William editio blowing stappone a souther orato 164 dielle in Terentier epografi

$$\frac{\partial \mathcal{L}}{\partial x} = (x - y - y)^2,$$

удот в истана?

S(x,y) = 1 + y + (x + y) + x + y where are a conclusion (ii) p=1 ,  $x=\exp(1/\epsilon)$ , where e is constant p: e=-1 . Then fix e p, where e is a constant.  $(2) \neq 0$  for the (x + y) where  $y \in y$  according [LC, GAIL SC 7 . 2 Warks]

Giral Gors controlls towing strandard a different at 004.410.1

$$y^2 = 2y^2 + 2y = 2\xi + 2\xi^2$$

ha carrellars a nime little. Higger, a regulation p (5) - 2 - 2x = 9.5

IDF (BATE-2017 ; 2 Marks)

O 72 indication of the appear  $\frac{\partial \mathbb{Q}}{\partial t}$  ,  $\mathcal{Q}=-\partial t \partial t$ - U of  $\beta = 0$  is

- $(\mathbb{C}^{n},\mathbb{C}^{n})^{n} \subseteq \mathbb{R}^{n} = 0$  $(0, || O(\theta + 1)) \approx$
- (8) Q. J. L. 1 §. (c) C(s − − − ≤

PSE, SATE-2017 - 2 Merke)

© 78 A california ak 2 kg was yata ga ya yebo iy of the mat. A coroon  $\delta(\mathbf{r}) = \mathbb{R}^{nk}$  (in N) is any field  $\omega_{i}(t,t)$  ,  $\omega_{i}(t)$  regularly management at all all on MPlease to be where "denotes time in socoopies, the WCOCivilin As in to the decrea claceket the particle Immodinie vilotte in militari i wal 😅 me

(CL, (2017, 2017)

Q.74 The consider inequal of  $(x + yx + yy)^2 = yy + y$ 

$$\{a\} \quad \forall \quad \forall v = v_0 + \frac{1}{2}(v_0 + 2) \left( d^2 + v_0 \right)$$

$$|\langle \lambda \rangle| \geq - |\langle x \rangle + |\langle y \rangle| + \frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} \left( -\frac{2}{2} \left( -\frac{2}{2} \right) + \frac{1}{2} \right)^{\frac{2}{2}}$$

- $|||f_{i}^{*}|||^{2} = d_{i} + N_{i}^{*} + \sqrt[3]{6L} + \sqrt[3]{2\left(\kappa^{2} + L\right)^{\frac{1}{2}}}$
- (a)  $\times -8c + Q_2 + Q_3$

IBSE Freima-2017]

© 75 life prove page 5 seconds con dec ≖nor a fina noreamatine skylikeers are eit me?

- (4) <sub>28400</sub> times as or girls, longth 55
- $d_{\mathcal{F}} \underset{\text{define}}{\otimes} \operatorname{totals}$  in some one can be expected as
- $|K(t)|_{t\geq 2n-2}$  times its original length be specificable
- (d)  $\frac{4}{8645}$  in region gives digit be showned (LSL Prolims 20-7)

# Answers Differential Equations

- 36.5 300  $\langle \phi_{ij}^{\prime} \rangle = 0$ . 16) - 6, 16) - 7,  $\mathfrak{h}(1-\delta)=\mathfrak{h}(1-2)$ Пä 10. 3/4 - 13. (5) 14. (4) - 15. (c) - 18 (d) - 17. (c) - 19. (d) 72. IL
- 19. 144 -21,  $\sin -79$ ,  $\sin -29$ , (s) -24, (s) -25, (s) -28, (s) -27, (s)20. (c)
- [29, 10] [50, 63, 31, 74; [32, 60] [30, 60] [34, 6d) [35, 6d) [35, 23. juga
- $\phi C_{0}(30-88)$  ,  $\phi = 89-(10)$  ,  $C_{0}(10)$  ,  $\Phi C_{0}(10)$  ,  $\Phi C_{0}(10)$
- 47 (4) 46, pp. 48, (c) 55, 40, 55  $6^{\circ}$  59, 40 451. 59. 33 - 01. m: 59. (7) 35 G/ 37. G/ 39. (2) 60. 301
- 71. <sub>88</sub> 72. (d) 74. (6)

# Epplemations Differential Equations

### 1. 193

Georgial equal (a)

$$\frac{dr}{dt} = p^{1/\epsilon} = 0$$

$$\frac{-2y}{y^2} = \alpha x$$

$$\int \frac{dr}{r^2} = \int dr$$

$$\frac{1}{r} = 1 - 0$$

$$\frac{1}{r+1} = 0$$

### 2. (E)

$$\frac{\sqrt{k}}{2} = 1 = k^{-1}$$

gare this ginns a Na separate he of

. He with a poor work

$$\frac{\frac{1}{2}\frac{O_1}{V}}{\frac{1}{V}} = \frac{1}{2} \cdot e^{\frac{1}{2}} + \frac{1}{2} \cdot e^{\frac{1}{2}}$$

### th: ъ.

Organis  $\{a_j\}_{j=1}^n$  is for any well propose  $a_j: a_j \in A_j$  =  $A_j$ . Degree is booke of lighter, and valve tem Jorgegraa 1.

### 4. ia:

$$C(sen, -2s) = 2s c$$

$$\frac{ds}{dt} = Su$$
$$\frac{ds}{dt} = J_1 dt$$

$$\begin{aligned} & \left(\frac{\partial u}{\partial t}\right) = \left(-\beta \right) + \\ & + \left(-\beta \right) = -\beta t + C \\ & + \left(-\beta \right)^{2\alpha} + \left(-\beta t + \beta^{-\alpha}\right)^{2\alpha} \\ & + \left(-\beta t + \beta^{-\alpha}\right) + C + \beta^{-\alpha} \end{aligned}$$

with 
$$q = d^{\alpha} + C_{\parallel}$$
 , 
$$q = (0.25) c^{\alpha \alpha} =$$

New parting in the continue (C) has

$$\begin{aligned} & x_0 = 0, \, e^0 \in \mathbb{F}_0 \\ & x = 0, \, -x_0 \\ & + (a) \text{that } \, x = -x_0 \, e^0 \\ & \text{the } \, -x_0 \, e^0 \, e^0 \end{aligned}$$

### 5.

$$\begin{aligned} \mathcal{G}[L(x)] &= \frac{\partial \mathcal{G}}{\partial x} + \mathcal{G}[x] x + \mathcal{G}[x] x^{2} + \mathcal{G}(x) x^{2} \\ &= \frac{\partial \mathcal{G}}{\partial x} + \frac{\partial \mathcal{G}}{\partial x} x^{2} + \frac{\partial \mathcal{G}}{\partial x} \\ &= \frac{\partial \mathcal{G}}{\partial x} + \frac{\partial \mathcal{G}}{\partial x} x^{2} + \frac{\partial \mathcal{G}}{\partial x} \end{aligned}$$

 $\S_{\rm SC(S)}$  , the given affects teller of the  ${\rm const}_{\rm SC(S)}$ 

$$\frac{1}{(x - x)(y - \frac{2^{k_0}}{2^k})} = p(\xi x + x)(0)^{k_0}$$

algebra with the  $(1+\psi)_{\mathcal{F}}^{-1}$  , we use

$$\frac{dt^{2}}{dt^{2}} = d(0)^{-1} + d(y)^{-1} + d(0)^{-1} + d(0)^{-1}$$
$$+ (y) = d(y)^{-1} + (y)^{-1} + (y)^{-1} + (y)^{-1} + (y)^{-1}$$
$$+ (y)^{-1} + (y)^{-1} + (y)^{-1} + (y)^{-1} + (y)^{-1}$$

two this theory three adopteds the life card ,significati en 194 (55 °C)

### ð. (A)

$$\begin{aligned} \frac{g^2(t)}{g(t)} &= \frac{g(t)}{g(t)} = -\frac{g_{t,t}}{g(t)} \frac{g_{t,t}}{g(t)} \frac{g_{t,t}}{g(t)} = 0, \\ &= \frac{g_{t,t}}{g(t)} \frac{g_{t,t}}{g(t)} = 0. \end{aligned}$$

 $\eta_{\rm BC} \propto \kappa / 100 {\rm at GeV} \approx 6.50 {\rm erg s}^{-1}$ 

$$\begin{aligned} G^2 &= 2^{n}G & \text{ i.i.} &= G \\ &= 2^{n} = -1 + 4i \\ &= G (G^{2^{n} - n^{2^{n}}} - G_2)^{n} \overset{\text{to out}}{\longrightarrow} \end{aligned}$$

$$= c^{-1} \cdot e^{i\alpha} + C_{i}e^{-i\alpha}$$

$$= (C_{i}(cos4c + 1.4 \text{ my}) - C_{i}(cos4c + 1.4 \text{ my}) + C_{i}(cos4c) + (C_{i}(cos4c) + (C_{i}(cos4c)) $

$$\begin{aligned} & G \cap G_{S}(a) \text{d} a + G_{S}(a), \\ & \text{with} & G_{S} \cap G_{S}(a) \text{d} w \text{d} a + G_{S}(a), \\ & + G_{S}(a) \text{d} w \text{d} a. \end{aligned}$$

$$\frac{Q_{k}^{*}}{Q_{k}^{*}} d(x) = \int_{0}^{\infty} \frac{1}{k} dy$$

$$\therefore (1/4) C_{k} + C_{k}^{*} (y) = -5$$

$$4C_{k}^{*} + C_{k}^{*}$$

$$C_{k} = \frac{1}{2} (x - \frac{1}{4})$$

A 
$$T_{y} = \operatorname{forc}(J_{y} = \frac{1}{2})$$
 
$$x = \pm \operatorname{forc}(J_{y} = \frac{1}{4}) \times \operatorname{reg}(y)$$

## 7. (c) Given adumenti-

$$\begin{split} \frac{\partial^2 v}{\partial x^2} &= \frac{\partial v}{\partial y} + i y = 0 \\ &= \frac{\partial^2 v}{\partial x} + \mu \mathcal{Q} + \frac{\partial}{\partial y} v = 0 \\ &= \frac{\partial^2 v}{\partial x^2} + i \sqrt{2} + \frac{\partial}{\partial y} = 0 \end{split}$$

Probability is  $\varphi = \varphi \cup Q \cdot \varphi \cap (\varphi_2, s_2)$ 

 $-3.515 \pm n < t_0 < t_1$ 

Show 
$$\mu(0+\alpha)=0$$
 are  $\alpha=-1$  given  $\beta=-3$ . Further that  $\alpha=-2\beta=-1$ ,  $\beta\to\beta=-2$ . The first  $\beta=-3$  is  $\beta=-3$ .

### B = (c)

Green sourceasts

$$\begin{split} \frac{g^{0}f^{0}}{gx^{0}} &: \partial \frac{\partial f}{\partial x} = (g + 0) = 0, \\ \Rightarrow & [\partial f + (g^{0} + 2)] = (g + f)[[g = 0] \\ -21 & \text{or } A \\ d(f) & g = S \\ \cdots & (2S + 4D + 4][g = 0] \end{split}$$

$$C^2 = 4D = 4 = 0$$

$$A(1 = 2)^2 = 0$$

$$A(2 = 2)^2 = 0$$

$$A(3 = 2) = 3$$

$$A(3 = 2) =$$

# в (Б)

$$\begin{aligned} \beta_1 &= \beta_1 S^2 - 75 + \beta_1 = 0 \\ & (D - 2)(D - 3) + 0 \\ & D + 2, 3 \\ & c + 2^n + 6^n \end{aligned}$$

## 10. (a)

$$-\frac{\partial U}{\partial t} = -\alpha A \qquad \qquad ... T$$

Where 
$$F = \frac{4}{2} \cos^3 x$$
 
$$F = 4\pi x^2$$
 
$$\frac{\partial F}{\partial x} = \frac{1}{3} \pi x^2 S x^3 \frac{\partial x}{\partial x} + \sin^2 \frac{\partial x}{\partial x}$$

Substitution theory in the accom-

$$\frac{A_0 e^{\frac{2\pi i}{3}} \frac{\partial Y}{\partial t}}{\partial t} = -w(A_0 e^{\frac{2\pi i}{3}})$$

$$\frac{\partial Y}{\partial t} = -w$$

In Space, we get

$$\begin{array}{lll} & r & -k_1 = C \\ \mathbf{a}, & \mathbf{r} = 0, & r = 1 \\ \Rightarrow & 1 = -k_2 < + C \\ \Rightarrow & C = 1 \\ \dots & r = -k_1 < 1 \end{array} \tag{6}$$

war at the Silman this

$$r = 3.45 \text{ m}$$

, where substituting this value of A is equal  $\omega_{i}(q)$  , we get,

$$\mathcal{L} = -\frac{6.5}{2} \mathbf{r} \cdot \mathbf{r}$$

puting of 0 (1x1 xx) pletely evacations;

In this we will determine region 
$$0 = \frac{\log t}{s} t + t$$
.

### 1-(b)

(Appropriate)

$$\frac{\partial V}{\partial x} + 2 x V = e^{-x^2}$$

This is a forence of the encourage of the letters.

 $_{1.50}$  linear  $_{20}$  ( $_{20}$  = 18  $_{1.50}$  ) (20.1535)  $_{1}$ 

Imegratory business.

39 (114 % V)L+3 • [€XF)Qx + €

$$\chi e^{\hat{x}_i} = \left(e^{e^{\hat{x}_i}} e^{\hat{x}_i} dz + 0\right)$$

$$y = (y - y) + 1$$
 (given)  
 $y = (y - y) + 1$ 

$$\chi = -19^3 \pm 3 \pm i$$

Garden at Office to

$$-9.2^{+1} = 0.1^{-1}$$

### 17. (2)

$$\frac{d^2v}{dv^2} + 2\frac{d\phi}{dx} + 2V = -J\phi^2$$

$$\Rightarrow (20 + 2)^{\circ} \cdot (30) = 3e^{2s}$$

Paris, le i Roma.

$$|11 - \frac{1}{12^2 + 46} + 36^{2^2}$$

Now there  $\frac{1}{PD}\phi^{b} = \frac{1}{C_{c}}\phi^{a}$ 

$$|\mathbf{p}| = 2 \frac{e^{2 \pi i \pi}}{(2 \hbar^2 + 2)^{1/2}} + 2 \frac{e^{2 \pi i \pi}}{2\pi} = \frac{e^{2 \pi i \pi}}{5\pi}$$

### 13. (2)

Çeçiyeni adılarını dəpinin ihme pekeralı ts, ing visa proce periust valatter top differentia. abund datis they let be discussed a street with the consist. arta mice na kwi 66#61

plegger hald the divgree all turden is bower

$$\propto \frac{\sqrt{c_2}}{6^3}$$

### 14. 133

$$\frac{|\mathcal{C}_{\mathcal{F}}^{\dagger}|}{\sqrt{2}} = \mathcal{F}^{\dagger}(1)$$

i ski-vedade seperad⇔i i M

$$\frac{dE'}{dt} = dt \underline{dt}$$

$$\int \frac{dh}{dt} = \int e^{t} dt$$

$$\Box = -\log \varphi = \frac{\lambda^2}{3} + C.$$

$$\Rightarrow \qquad y = z^{\frac{1}{2}} + \frac{1}{2} z^{\frac{1}{2}} + z^{\frac{1}{2}}$$

$$x = 1, -2^{\frac{1}{2}}$$

$$t_{\rm max, RH} = 0 \quad t = 1$$

### la. fei

$$G_{1} = \frac{25}{27} \times g^{2}$$

$$\Rightarrow \frac{-160}{100} = \int_0^\infty 0.5$$

### lü. (c)

$$\frac{\partial \theta}{\partial t} = -\lambda \left( 0 + 0.1 \right)$$

gy gwig is lact or buoling).

m jaraje kaj polis a porebio kaj nasparkling lira. ченае се, ме даби

$$\frac{ab}{b-ba} = -abb$$

$$\int \frac{d\theta}{\theta - 2\sigma} = \int d\theta$$

$$= \{ \eta_i(t-\infty) = \{ a_i \in \mathbb{F}_1 \}$$

$$\begin{aligned} & + \left( \frac{1}{2} \left( \frac{1}{2} - \frac{1}{2} \right) \right) & = -\frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right) - \left( \frac{1}{2} + \frac{1}{2} \right) \\ & = -\frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right) - \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right) - \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right) - \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right) - \left( \frac{1}{2} + \frac{1}$$

Who show inducting at  $M \in \frac{3}{7}$  for  $n(\ell)$  and  $g(\ell)$ 

$$\begin{split} & t = 2k + 30 \times \left(\frac{Q}{2}\right)^2 \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}{2} \\ & = 4k + 2000 \cdot \left(\frac{1}{2}\right)^2 \cdot \frac{1}$$

$$17.$$
 (a)

$$\frac{\partial^2 y}{\partial x} = \frac{-x}{y}$$
$$\frac{\partial^2 y}{\partial y} = -x \cos x$$
$$-\int y \, dy = \int -x \, dx$$

$$\frac{\sqrt{2}}{2} = \frac{1}{2} \frac{1}{2} = 0$$

$$= \frac{\sqrt{2}}{\sqrt{2}} = \sqrt{2} \frac{1}{2} = 0$$

$$\begin{array}{ll} 2. & SO(\sin x) \frac{\mathbf{p}^2}{2} = \frac{-e^2}{2} + 2 \\ \Rightarrow & x^2 + 2^2 + 4 \end{array}$$

$$\frac{\partial x}{\partial t} = Sz$$

$$\frac{\partial x}{\partial t} = Sz$$

$$\frac{\partial x}{\partial t} = \left(-\overline{z}z\right)$$

$$x = Sz + z$$

$$z = 0^{-3/4}$$

$$\frac{\partial^2 p}{\partial x^2} + V = 0$$

$$\frac{\partial x}{\partial x} + C = 0$$

$$\frac{\partial x}{\partial x} + C = 0$$

$$2x = -2x + C = 0$$

$$2x = -2x + C = 0$$

$$2x = -2x + C = 0$$

$$3x = -2x + C = 0$$

$$0 = C^{2} ((0.000(1-n) - 0.001) \times E)].$$
  
= (0.0000 + 0.000 u  
= (1000 u - (1000 u

ere 57 and Otto Same regards

## 20. (h)

Fig. (1)

As a law equation is

$$O' = 0 = 0$$

10.  $O = 1438$ 
 $C  

 $A^{*}(t) = \exp(\sqrt{t}t + |t|) (t)$ 

## 21, (3)

### 22. (hj.

Tphomoedwhise of others michocal in Lieb.

## 23. (8)

$$\frac{\partial y \frac{\partial y}{\partial x} - 2y = 0}{\partial x} = \frac{-2x}{8y}$$

$$\Rightarrow \qquad J(x)y = -Sx^{2}x$$

$$\Rightarrow \qquad \tilde{J}S(x)y = \int -S^{2}x^{2}x$$

$$\Rightarrow \qquad \frac{2}{2}x^{2} = -2 \cdot \frac{x^{2}}{2} + C$$

$$\Rightarrow \qquad 3y^{2} + 2y^{2} = 0;$$

$$= \frac{\frac{1}{(\frac{1}{2})^{2}} - \frac{y^{2}}{(\frac{1}{2})^{2}} = 0}{(\frac{1}{2})^{2} + \frac{y^{2}}{(\frac{1}{2})^{2}} + \frac{y^{2}}{(\frac{1}{2})^{2}} = 1}$$

$$\Rightarrow \frac{y}{(\frac{1}{2})^{2}} + \frac{y^{2}}{(\frac{1}{2})^{2}} = 1$$

i garije i jerije od i svi alna oduntor prava rigori elipo⊀e.

24 (c)

$$A_{i} = \frac{dy}{dx} = \frac{y}{x}$$

$$= \frac{2ix}{x} = \frac{\sqrt{x}}{x}$$

$$\Rightarrow = \frac{(\sqrt{y})^{2} - (\sqrt{y})^{2}}{x}$$

$$= \frac{(\sqrt{y})^{2$$

$$5 \qquad \frac{\partial y}{\partial x} = \frac{y}{x}$$
$$\frac{\partial y}{\partial x} = \frac{\partial x}{x} \to \int \frac{\partial y}{\partial x} = \int \frac{\partial y}{x}$$

$$\begin{aligned} \log y &= \log x + \log y, \\ \log y &= \log x + \log x, \\ \log yx &= \log x, \\ yx &= x, \\ y &= x, \end{aligned}$$

$$\begin{aligned} & \mathcal{C}_{0}, & \frac{\partial y}{\partial x} = \frac{2}{y}, \ y \, \partial y = x \, \partial x \\ & \Rightarrow \int y \, \partial y' = \int z \, \partial x \\ & \frac{y^2}{y^2} - \frac{x^2}{2} = \frac{x^2}{2} + x \, x \, x \\ & - y^2 - y' = y' \\ & \frac{y^2}{y^2} = \frac{x^2}{x^2} + z \quad \text{secalor withy satisfies} \end{aligned}$$

$$\mathbf{E}_{i} = \frac{d\mathbf{v}}{dz} = \frac{-\mathbf{v}}{\mathbf{v}} \Rightarrow \int \mathbf{v} d\mathbf{v} = \int \mathbf{v} d\mathbf{v}$$
$$= \frac{\mathbf{v}^2}{2} + \frac{\mathbf{v}^2}{2} + \frac{\mathbf{v}^2}{2}$$

$$\begin{split} \frac{y^2}{2} &= \frac{x^2}{2} + \frac{y^2}{2} \\ &= y^2 + y^2 + \cdots \\ &= \lim_{n \to \infty} \sup_{n \to \infty} ||u_n|| \leq \sup_{n \to \infty} ||u_n|| \leq \min_{n \to \infty} ||u_n|| < \min_{n \to \infty} ||u$$

25. (a)

Shan alterence equal of its

$$-\frac{\partial F}{\partial x} - b = x^2$$

$$\Rightarrow -\frac{\partial F}{\partial x} - \left(\frac{F}{x}\right) = x^2 \qquad (40)$$

Zinndard form elle blåt, inest douzikens

$$\frac{\partial f}{\partial x} + Q_{f} = 0 \tag{6}$$

whele Send Olimpton of very surfact floods given the

$$y(t,-) = [Q(t,F) \cap f(t)]$$

e# gre, m∌ jesta (jihozon) † (k. s<sup>(re)</sup>. Heze niegodka (j).

$$P = \frac{1}{4} \operatorname{and} (t) = t^2$$

$$P = e^{t/2} = e^{t/4} = t^2$$

$$20 \text{ d}, \phi : [g(\phi)] = -x^2 x \text{ of } x = 0.$$

$$g_i = \frac{\sqrt{2}}{2\pi} = 0$$

g van aanddon

$$\chi(t)\geq \frac{c_0}{2}$$

$$0 \text{ we shall } z = 0 \text{ } y + \frac{p}{q}.$$

$$s = \frac{3}{5} + 1 = \frac{1}{5} + 3$$

$$\Rightarrow \qquad \varphi = \frac{\dot{\varphi}}{\dot{\varphi}} = \frac{1}{2} = 1$$

The disc gas 
$$\frac{a^2}{a^2} + 1$$

$$\Rightarrow$$
  $y = \frac{\sqrt{y}}{4} = \frac{1}{4}$ 

20 (a)

$$\frac{\partial^2 \mathcal{C}}{\partial x^2} = 4\sqrt{\frac{2}{2\pi}}\int_0^{\pi} |\nabla \mathcal{C}| = 0$$

Removing rapi w/a + 5 got

$$\left[\frac{\alpha^2 \sqrt{2}}{2\alpha^2}\right] = \left[0 \left(\frac{2\alpha^2}{\alpha \pi}\right)^4 + y^2\right]$$

(x,y) of order x 3 or x and y less,  $\| y \|_{L^{\infty}(\mathbb{R}^{n})} \le \frac{x^{n}}{|x|^{n}}$ 

Персодоста 2 эт са сазента пућес, от бостез

$$\frac{\alpha^2r}{(\lambda)^4} = \frac{f(\lambda^2)}{2\alpha k_0^2} = 0 \text{ in Pind a con} \left(\frac{g^2f}{4g^2}\right) = \text{in Pind}$$

can incar, since the project if  $s(\frac{d^2r}{d^2r^2})$  is not showed in incard there is shown in

$$\frac{d^2 v}{dy^2} + \frac{\eta v}{\eta y} = 0 \quad \forall v = 0$$

### ΞE

$$\label{eq:constraints} Size : \frac{e^{2\sigma}}{\sigma^2} + 0.\frac{2\sigma}{\sigma^2} = 2\sigma + 0.$$

$$|\mathbf{a}(0)| = 1 \quad \text{and} \quad \frac{d\mathbf{a}}{d\mathbf{b}_{\mathrm{max}}} = 0$$

$$(3-65-6-3)$$
  
 $(5+7)(5+2)=0$ 

. Solution is 
$$y = \phi_1 \phi \Delta + \phi_2 \phi^{\Phi}$$

Сико, исто и

We have  $|\Omega| = \Omega + 1$ 

$$\frac{\dot{m}}{ct} = (2C, \, c^{(k)}, \, 4C, \, \cdots)$$

Figure 
$$\frac{\partial^2}{\partial t_{a^2 = 0}} = 0 \text{ and gas}$$

$$SU - 4R_0 = 0$$
 ... (i)

 $S(C+4.7_0\pm 1) = 0....6$  First Q(1)000 (Y) with weak C(1)12 and  $\Delta_y=-1$  $\mathbb{X}^{n} \mapsto \mathbb{X}[0,0]$  on  $(0,0)^{n} = S_{n} \mathbb{X}^{n} = g_{n} \mathbb{X}^{n}$ 

### 30. (레

$$\frac{\partial^2 g(t)}{\partial t^2} = \frac{g(t)}{t^2} = 0$$

$$\Rightarrow \qquad \quad \varphi^* = \frac{1}{4^n} = 0$$

$$=\frac{2^{n}+\frac{1}{2^{n}}}{10^{n}}\frac{e^{2}e^{-1}\frac{1}{2}}{10^{n}}$$
 where  $e^{2}e^{-1}$ 

... For this is 
$$|\sigma(z)-\tilde{\sigma}(z)|=\frac{1}{2}(1+|z|^2)+\frac{1}{2}(1+|z|^2)$$

$$egin{aligned} & \mathcal{C}(0) = \mathcal{C}(0) + \mathcal{C}_0 = \mathbf{r}_0 \\ & \mathcal{C}(0) = \mathbf{C}_0 \cdot \mathbf{c}(0) + \mathcal{C}_0 \cdot \mathbf{c}(0) = \mathbf{C} \end{aligned}$$

$$\begin{array}{ccc} \Rightarrow & & \omega_{0} \circ \gamma = 0 \\ \Rightarrow & & \frac{\omega_{0}}{2} = 0 \end{array}$$

A The souton toward in the

$$\frac{\partial \phi}{\partial x} = (1 - \phi^2)x$$

$$\int_{-\infty}^{\infty} \frac{dx}{x^{2}} = \int_{-\infty}^{\infty} ax^{2}x$$

$$\operatorname{var} = \varphi = \frac{\sqrt{2}}{2} + C$$

$$z = (s) \left[ \frac{a^2}{a} + \frac{1}{a} \right]$$

$$\frac{\partial r}{\partial x} = e^{xx}$$

$$[\phi] = [\phi]^{\alpha} \phi$$

$$-\frac{s^{0}}{2}(iS) = \frac{1}{2}s^{2}(iX)$$

 $= \{\gamma_j(0) \mid i \in$ 

$$\frac{\partial y}{\partial x} = \delta y$$

$$\Rightarrow \frac{dy}{dt} = adt$$

imga ngaghgales

$$\Delta = -|\gamma| \phi$$

lende.

$$I = 2 + 3 \times 4 \text{ for } 0$$

$$\Rightarrow \ln v \quad \text{if } c = cc.$$

$$\Rightarrow -1\left(\frac{b}{c}\right) \approx ca$$

$$\Rightarrow \frac{1}{2} = e^{\frac{1}{2}}$$

$$\frac{dy}{dz} + \frac{y}{z} = z + \lambda(1) = 1$$

This satisfies the intersection  $\frac{\partial y}{\partial x}$  ( fy = 0

$$\operatorname{color} P = \int_{\mathbb{R}^n} \lambda \, \mathrm{d} x \, (\lambda - \lambda)$$

Fill intogrations tables

$$= e^{\int x_{i,j}} - e^{\int x_{i,j}} = e^{-ix} = x$$

Strone

$$\gamma(\eta) \in \{\mathfrak{I}(\Gamma|\Delta) \mid \mathfrak{I}$$

$$= (y \cdot y - j) x \cdot x (ay + 3)$$

$$\Rightarrow - - \frac{1}{2} \left[ \frac{1}{2} \partial t - C \right]$$

$$(\varphi) = -\frac{\pi^2}{8} \pi C$$

$$y = \frac{y + \frac{y^2}{2}}{y} \frac{\gamma_0}{y}$$
 When  $y = y(0) = 1$ 

$$\Rightarrow -\frac{\pi^2}{3} - \frac{\pi}{2} - 1 \Rightarrow 0 - \frac{\pi}{3}$$

$$\Im x = \mathbf{a} \hat{\mathbf{y}} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{y} + \frac{x^2}{3} - \frac{2}{3x}$$

## 2ა. (ძ):

$$C(a(y)) = \frac{2y}{dy} = 2y = 0 \text{ and } a(1) = 2$$

$$\frac{\partial \mathcal{F}}{\partial x} = \partial y$$

$$\int_{-\infty}^{\infty} -\int_{-\infty}^{\infty} -2cb$$

$$\begin{array}{ccc} -\infty & & 1/\gamma = -S[z-0] \\ -\varphi & & & \gamma^{-1} & S^{1} = S[e^{-2t}] \end{array}$$

$$p(t) = \cos^2 t + b + b + b + b = \frac{b}{b}$$

$$F_{i,j} = \frac{1}{9} e^{-2x_i} - 6x^2 e^{-2x_j}$$
$$= 36.96 \text{ and}$$

### 36

 $p_{N}$  given illa om arcqua, un  $\kappa$ 

$$\frac{dx}{dt} + c = \text{restly only by a likewise } t = \frac{1}{2} \cdot \text{which }$$
 which we have

$$\frac{d^2k}{dt} + \frac{k}{t} = 1$$

Without Big index of the Anthroquesion

$$\frac{\partial x}{\partial t} = \partial x = Q$$

Where 
$$r = \frac{1}{r} \cdot \sin r \cdot C = 1$$

lam amiling factor

Faither 5

$$_{\mathbf{z}},g_{\mathbf{z}})=\int\partial_{\mathbf{z}}(\nabla \mathbf{r})\mathbf{d}\mathbf{r}\cdot\mathbf{0}$$

$$g_{-}:=\{(1, \dots, 2k+2)$$

$$_{AB}=\frac{2^{2}}{2}\cdot |O|$$

$$\gamma_{\mathbf{x}} = \frac{1}{2} \pi \frac{G}{4}$$

$$F(J(x,t^*)) = \frac{1}{\tau_0}$$

$$\Rightarrow \frac{1}{2} x \frac{\overline{C}}{1} - \frac{1}{2}$$

$$\Rightarrow C = 0$$

### 57. (d)

te il ni equatori, degleridani variable il sub pi do canada sa estisa bisarci ela concadadan.  $\kappa_{\rm p}$  was affected uplied as from it restricts affect 31 startler 12.

### 39. (6)

(3 yan alterential edg NIPF)

$$\lambda(D) = \lambda C(D) = 0$$

Il io lawer più annila legue, un esta constant naerte ara

y - Clement I solution i is:

Death a given ay

$$\begin{aligned} \eta_{i} \phi_{i} &= \alpha \hat{x} + mk = 0 \\ \phi_{i} &= 0, \ \alpha^{i} + i \delta \\ OF &= O_{i} \phi^{(i)} + i \delta_{i} \phi^{(i)} \\ \gamma &= \alpha + i \gamma_{i} + i \delta_{i} \phi^{(i)} \\ \gamma &= \alpha + i \gamma_{i} + i \delta_{i} + i \delta_{i} \phi^{(i)} \end{aligned}$$

$$p(x) = -p(x) = 0$$

We get 
$$C_1 * C_2 = 0 \implies C_1 = C_2$$
  
 $C_2 = 0 \implies C_3 = 0$ 

$$C_{0} = \frac{1}{\left| e^{2s} - e^{2s} \right|} = C_{0} e^{2s}$$

$$C_{0} = \frac{1}{\left| e^{2s} - e^{2s} \right|} = C_{0} = \frac{2s}{1 - e^{2s}}$$

$$C_{0} = \frac{2s}{1 - e^{2s}} - \frac{1}{1 - e^{2s}} e^{2s}$$

$$C_{0} = \left| \frac{1}{1 - e^{2s}} \right|$$

$$C_{0} = \left| \frac{1 - e^{2s}}{1 - e^{2s}} \right|$$

$$AD(1)(A) = 0$$

$$1 + D(1)(A)$$

$$2 + D(A) + C_{3}(A)$$

$$3 + C_{3}(A) + C_{3}(A)$$

$$4 + C_{3}(A) + C_{3}(A)$$

$$6(0) = 1$$

$$1 + A + C_{3}(A) + C_{3}(A)$$

$$6(0) = 1$$

$$A + C_{3}(A) + C_{3}(A)$$

$$A + C_{3}(A) + C_$$

$$N = -810 + 0.00 + 0.00$$

$$0 = -87$$

$$F = -0.00 + 0.00$$

$$0 = 6.00 + 0.00$$

Interest of the Attached to graph

$$-\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}} = \frac{\lambda}{\sqrt{2}} = \sqrt{2}$$

### 41. [d]

$$\frac{\mathrm{d} p_{ij}^{(i)}}{\mathrm{d} t} + k(t(t)) = g(t)$$

Teking Lad accesses gis milet both states, we ligger P(S = y(0) + y(0)) = Y(0)

$$|V(x)| + |x| = |x(x)| + |x(0)|$$

$$s = -\frac{V(r)}{8 - r} + \frac{V(2)}{8 - r}$$

Taking reverse best kellege transform, the payer  $A(t) = \frac{1}{2} A(t) + \frac{1}{2} A(t) = 0$ 

boll we want. 29% as a virtum bellium and give hat to the included by the new disagra-#Mile Zehon / New 2900

$$\frac{3\lambda}{5t} + 8t + 5y$$

$$\frac{dy}{dt} = 4t + 8y$$

$$\frac{d(x)}{dt(y)} = \frac{3}{4} + \frac{5}{8} \cdot \frac{3}{3}$$

$$\frac{d(x)}{d(y)} + \frac{3x + 5y}{4y + 4y}$$

45 (d)  

$$z = x + y$$

$$\frac{dz}{dx} = x, \partial y$$

$$\therefore \frac{dz}{dx} = 1 + \cos z$$

$$0; \frac{dz}{dx} = \int dx$$

$$0; \frac{1}{z} \int \sin^2 \left(\frac{z}{z}\right) dz = y - z$$

$$0; \frac{1}{z} \int \sin^2 \left(\frac{z}{z}\right) dz = y - z$$

$$0; \frac{1}{z} \int \sin^2 \left(\frac{z}{z}\right) dz = y - z$$

$$0; \frac{1}{z} \int \sin^2 \left(\frac{z}{z}\right) dz = y - z$$

### 44. [5]

$$\frac{\partial v}{\partial t} = h v_{\rm f} + h \qquad ...(1)$$
 
$$\frac{\partial v}{\partial t} = v^{\rm f} \qquad ...(1)$$
 Multiplying the inhalt side of equation (f)

$$\begin{aligned} & e^{i\phi} \left[ \frac{dy}{dx} + 2i\phi \right] = 0 \\ & \Rightarrow & \left[ \frac{d^2}{dx} \left( e^{i\phi} y \right) - 0 \right] \\ & = e^{i\phi} y = i\phi \end{aligned}$$

) and to given bean very conducts C = 2

$$\therefore \qquad \left( \frac{x^3y - 2}{y - 24} \right)^2$$

### 45. (a)

General Survey input programmed accounting

 $rac{dS}{S_{p}} + \Theta Y = 0$  when Plant the entry (i, entry), an  $\Theta Z_{p}$ Chivipach (no air ins harr)

$$\frac{\partial^2 x}{\partial x^2} = -30$$

$$\frac{\partial^2 x}{\partial x} = 0$$

$$(a^2 - 3b) = 0$$

 $A(\omega^*_1\otimes r_1) \exp(\omega^*_1) = (-1)^2 = 0 = 0$ 

$$\begin{aligned} & \exp(ab) \cdot (ab) = 0 = 0 \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} - b^2 \right) + \sin(b) \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} - b^2 \right) + \sin(b) \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} - b^2 \right) \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} \cos(b) + \cos(b) \right) \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} \cos(b) + \cos(b) \right) \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} \cos(b) + \cos(b) \right) \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} \cos(b) + \cos(b) \right) \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} \cos(b) + \cos(b) \right) \\ & = -(b) \cos(b) \cdot \left( \frac{1}{2} \cos(b) + \cos(b) \right) \end{aligned}$$

### 47 (a)

Open Men confocultion may design the formula  $(S^2 + 1) \otimes S = 0$ 

HallAla, is

$$20 = 1 - 6$$

$$0 = 0$$

$$3 : 0.5 : 5$$

$$0.05 = 0$$

$$0.05 = 0 = 0$$

$$0.05 = 0.5 : 0$$

$$0.05 = 0.5 = 1$$

$$\label{eq:condition} \varphi = \lim_{t \to 0} \varphi = \exp(t) + \operatorname{sopplies} \left( \frac{\operatorname{con}(t)}{\operatorname{sin}} \right)_{t \in \mathbb{R}} = 0$$

$$\frac{e_2(t) - 0 - f_2(c)(0)}{\frac{e_2(t)}{e_2(t)} + f_2(c)}$$

$$= \frac{e_2(t)}{e_2(t)} - f_2(c)$$

$$\rightarrow \frac{\mathcal{O}v_{p}(r)}{d!} = 1 \, \, \mathbb{C}_{p} \, , \ \, 1$$

$$\dots = \lambda J \Pi = \delta T \cdot$$

$$\begin{aligned} \mathbf{B}(t) &= \begin{vmatrix} x_1(t) & x_2(t) & 1 \\ (b_1(t) & \underline{x}^2 \cos t) \\ \vdots & \underline{x} & \underline{x} \\ & x \cos t & \sin t \\ & 1 - \sin t & \sin t \\ & 1 + \cos^2 t & 1 & \sin^2 t & 1 \end{vmatrix} \end{aligned}$$

$$\frac{d^2f}{dx} + 2dx \frac{dx}{dx} = y^2 = 0.$$

The phase terials equation  $\otimes Q \hookrightarrow \mathbb{R}^{2}$ 

$$\ln 2 = 2 \text{ or } m = 0 = 0$$
.

$$\mathbf{M}_{\mathrm{p}},\mathbf{M}_{\mathrm{p}}=\frac{-2\lambda_{\mathrm{p}}-\sqrt{2\alpha_{\mathrm{p}}^{2}}}{\Delta}$$

Since you are to a pickle inc

$$\frac{J^{\alpha} - m_{2}}{2} = \frac{3a - \sqrt{4a^{2} - a}}{2} \cdot \frac{1}{2} = \frac{-3a - \sqrt{2a^{2} - a}}{2} \cdot \frac{a}{2} \cdot \frac{\sqrt{4a^{2} - a}}{2} \cdot \frac{a}{2} \cdot \frac{\sqrt{4a^{2} - a}}{2} \cdot \frac{a}{2} \cdot \frac{a$$

### 49 (b)

The offered a equation is given as

$$\frac{d^2x}{dt^2} = 2\frac{d^2x}{dt} + x = 2t$$
$$x = 10 \cdot x = 4t \cdot t$$

Since C = 0, i = BH3 form a zero, we find that

Boryage a like filliged

$$\lim_{\delta \tau} = \frac{\delta}{\delta \tau} = 2^{\epsilon}$$

$$5c_1/(20 + 26 + 1) = 0$$

$$(D+1)^2 = 0$$

$$y = ye^{-1} + 1007^2$$

$$+\frac{(a^2y^2+b^2y^2+y^2+1)}{(2a+y^2+1)}$$

$$\mathbf{Let} = \mathbf{r}^{2} \times \mathbf{Let} = 0.02$$

$$\frac{\partial}{\partial t} = d\Omega = 0 + \frac{\partial}{\partial L}$$

$$\frac{\partial}{\partial t} = d(\theta - t)$$

$$p^{2}(\mathcal{O}+s\mathcal{O})^{-1}(\mathcal{O}=J)$$

$$|\mathbf{e}(\mathbf{r} - 1) - 0 - 1|_{\mathbf{r}^2} = 0$$

$$(00.16\pm0.19)\pm0.04$$

$$(0.1 - 1)y = 0$$

$$\Delta_{-2}$$
 if any  $+\frac{1}{4}$  of fact to  $D^{2}=0$  and  $-\frac{1}{4}$ 

$$\begin{aligned} \text{OF Signature} & & & \text{Operator} \\ \text{Solinoids} & & & & \text{Signature} \\ & & & & \text{Signature} \\ & & & & & \text{Signature} \\ & & & & & \text{Signature} \\ & & & & & \text{Signature} \end{aligned}$$

Cally independent satisfies  $y = \frac{1}{x}$ 

Another in rependent solution  $\mathbb{R}_{\times \times}$ 

51 (a)
$$\frac{\partial C}{\partial x} = -5y$$

$$\frac{\int_{-2}^{27} y}{y} = -\int_{-2}^{2} x d^{3}$$

$$10 y = -5x + C$$

$$x = 2$$

$$10 z = C$$

$$5x = -5x + 7x = 5$$

$$x = 2$$

$$x = -5x + 7x = 2$$

$$x = -2x + 7x = 3$$

448. 
$$\begin{aligned} & -4 (x^2 x + t) f(x) \times \frac{y}{x} = (x_1, y) - (y^2 x) \frac{y}{x} \frac{y}{x} \\ & - \frac{y^2 x + x^2 y}{x^2 y} = \frac{y}{y} \times \frac{y}{x} \\ & - \frac{y}{x} \frac{y}{y} - \frac{y}{y^2 x} = \frac{y}{y} \times \frac{y}{x} \frac{y}{x} \\ & - \frac{y}{x} + \frac{y}{x} + \frac{y}{x} \frac{y}{x} \\ & - \frac{y}{x} + \frac{y}{x} + \frac{y}{x} \frac{y}{x} = \frac{y}{x} + \frac{y}{x} \frac{y}{x} \\ & - \frac{y}{x} + \frac{y}{x} \frac{y}{x} + \frac{y}{x} \frac{y}{x} = \frac{y}{x} + \frac{y}{x} \frac{y}{x} \\ & - \frac{y}{x} + \frac{y}{x} + \frac{y}{x} \frac{y}{x} = \frac{y}{x} + \frac{y}{x} + \frac{y}{x} \frac{y}{x} \\ & - \frac{y}{x} + \frac{y}{x} + \frac{y}{x} + \frac{y}{x} \frac{y}{x} = \frac{y}{x} + $

$$\frac{x \sin x + v_{12} t_{12} + x^{2} t_{23} x}{\cos 2x} = v_{12} t_{23} x$$

$$\frac{\Delta^{3} x + 2 t_{23} t_{23}}{a^{3} x} = v_{12} t_{23} x$$

$$3 + \frac{2 t_{23} t_{23}}{a^{3} x} = v_{12} t_{23} x$$

$$\frac{2 t_{23} t_{23}}{c^{2} x^{2}} = v_{12} t_{23} x$$

$$\frac{2 t_{23} t_{23}}{c^{2} x^{2}} = v_{12} t_{23} x + \frac{1}{a^{3} x^{2}} t_{23} x$$

$$\frac{2 t_{23} t_{23}}{c^{2} x^{2}} = v_{12} t_{23} x + \frac{1}{a^{3} x^{2}} t_{23} x +$$

heaq oling talib agges.

Mogra = togus = 
$$x = xy + y \log x$$

$$\Rightarrow x^2 = \frac{\cos \alpha x}{2}$$

$$\Rightarrow x^2 = x + \frac{y}{x}$$

$$\Rightarrow xy + xy = 0$$

58 Rel

64. Sol.

$$\frac{df}{dt} = 3.29$$

$$\frac{df}{dt} = 3.20$$

$$\int_{0}^{0.5} = \int_{0}^{0.5} 2dt$$

$$\log p = 0.05 = 0.25$$

$$\log \left| \frac{d}{dt} \right| = 0.25$$

$$0.0 \left| \frac{d}{dt} \right| = 0.25$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

$$0 = 0.50$$

...ıı i

$$\frac{dy}{\pi} \frac{dy}{2(3)^2y} = \frac{dy}{\pi + \cos 2x}$$
$$\frac{dy}{2(3)^2y} = \frac{dy}{2(3)^2x}$$
$$\sec^2 y = x + 3x + 4x$$

paggaran photh adds, weight

56 5d.

$$\frac{2^{k} + \xi_{1}^{n}(x, k + 0)}{r^{n} - 2r - 2r - 3} = \frac{3^{k}}{2^{k}} = \frac{3^{k}}{2^{k}} = \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} = \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} = \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} = \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} = \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} = \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} + \frac{3^{k}}{2^{k}} = \frac{3^{k}}{2^{k}} + \frac{3^{k}}{$$

 $\Rightarrow$  so they find  $\hat{I}$ Now going equation  $a(0) \in \partial \mathcal{D}^{\bullet}$ 

Substituting its y(a) and pol-

$$80 - 3 \stackrel{-54}{\cdot} - ...$$

$$|\rho_{\rm CDM}| = \frac{2 \frac{2}{3} r^2}{4 L} = - 2 \frac{1}{3} \ln 2 \, e^{2 \frac{2}{3} r} \, . \label{eq:resolvent}$$

$$\frac{1}{2}\frac{\partial y}{\partial x}\Big|_{x=0}=-0 \ ; \ y=-3.$$

$$\frac{\partial S}{\partial t} = 2(3+1) = 3$$

$$S = -1 + 4$$

$$\frac{\partial S}{\partial t} = (6.1 - 0.10) = 6$$

$$\frac{\partial S}{\partial t} = (4.0 + 0.10) = (4.0) = 5$$

$$\frac{\partial S}{\partial t} = \sqrt{1.01} = 1$$

Figure 1. Consider  $C_0 = 0$ 

$$\Rightarrow - - j(t) = (1 + 2)(t)^{2}$$

59. 30

$$\begin{aligned} \mathcal{G}^2 &= 3 \nabla = 2 + 0 \\ \mathcal{G} &= -1 - 2 \\ d(0) &= C_1 (\nabla + 1) \hat{\zeta}_1 (e^{-1}) \\ q(1) &= \frac{4 \cdot 3}{12} = C_1 (e^{-1} + C_2)^{-1} \end{aligned}$$

From hore 
$$\begin{aligned} & (C + \frac{(C - 2)}{\pi^{-2}}) + C_2 = \left(\frac{10e}{6\pi^{-2}}\right) \\ & : (C_1 + \frac{(10e)(20)}{6\pi^{-2}})^{1-2} \cdot \left(\frac{6C_1}{\pi^{-2}}\right)^{6/2} \\ & = \frac{3}{2}6988 \end{aligned}$$

Specifical information (1 ± 4) €

$$\begin{array}{ccc} \varphi & C = C & C_2 \\ C_1 = & C_2 & & \dots \end{array}$$

Also, go in parkers through this 1941

$$F_0(m,0) = C_1 = -C_2$$
 (all reprint) the set

$$\begin{array}{rcl}
\Rightarrow & 0.6 & 1.5 \\
& 6.7 & 0.5 \\
& 6.4 & 0.5 \\
\Rightarrow & 9.4 & 5.62 & 0.71 \\
& -6.7 & 0.7
\end{array}$$

### 63. (b)

Austra deputado e ·新月200年第二級 rn = 1 −1  $\gamma = (\gamma_1 + \gamma_2) \otimes \gamma$ g(0) = 1 $|\gamma + 1| + 2 \omega_s \delta^{\alpha}$  $g(T) : = \mathbb{C} e^{g}$  $-(1+(z_0))^2=34^2$ ·2 - 31

$$\Rightarrow \frac{(1 \cdot 10)(0.1 - 390)}{\frac{1}{2} - 0}$$

$$2 - 11 - 20e^{-1}$$

$$0.20 = 0.90$$

61. (<sub>d</sub>)

Detaillerent absonn an G

$$(y^{*})^{*}(1+2x)(y) + y(y) = 0$$

$$\mathbb{E} \mathbb{E} \left[ \left( \hat{\mathcal{H}}^{(i)}(\mathbf{x}) + \mathbf{v} \mathbf{x}_i(t) - \mathbf{v}^*(\mathbf{x}_i) \right) \right] > \|\mathbf{x}_i(\mathbf{x}_i) - \mathbf{v}^*(\mathbf{x}_i) \|_1 \|\mathbf{x}_i(t)\|_1$$

$$|29| = \frac{2900}{|9|^2} \frac{2000 - 3900 - 3900}{|9|^2 + 28 + 10}.$$

Given that 
$$\psi(0) = \psi(0) = 0$$

$$S(t) = \frac{1}{(s - \frac{1}{10})}$$

So, 
$$\chi(g) = \chi(g) \chi(g)$$

69. So.

60. (a)

$$\begin{aligned} 0.3^2 + 12.5 & -0.03^2 + 0 \\ -0.1 & +0.12^2 y - 0 \\ -0.1 & -0.13 \\ -0.1 & +0.12^2 y - 0 \\ & -0.1 & +0.12^2 y - 0.12^2 y$$

$$y = 1900 \text{ m}^{2} + C_{1} \text{s.m. SC}_{1} \text{ s.m}^{2}$$

$$y(0) = 36$$

$$36 = -3C + C_{2}$$

$$-36 = +16 + C_{1}$$

$$C_{2} = -18$$

$$\varphi = S_0 T^{(i)} - 1 \le i \le 2^{(i)}$$
 
$$\varphi = (0, i) \in \mathbb{R}$$

64 Sci.

$$1.78 + 20y = 0$$

$$-62 + 3 = 0$$

$$-60 + 20y$$

$$-7 = 0.00 + 30y - 2y.5 + 3z$$

$$+ 3 = 0.00$$

$$-2 = 2y$$

$$-2 = 2y$$

$$\begin{aligned} \sqrt{2} &= \mathcal{L}_1 \log \frac{2n}{p} + C_1 \log \frac{2n}{2} \\ &+ C_2 + 1 \sqrt{2} \\ \Delta &= -\frac{n}{p} = \sqrt{2} \sin 3\alpha \\ &+ \frac{\sqrt{2n}}{\sqrt{2}} = -\frac{12}{2} = -1 \end{aligned}$$

85. (2)

$$\begin{aligned} & \exists F \text{ is } (C' - CS) | v = -38\delta^2 \cdot D = \frac{0}{4\delta^2} \\ & A.F - m^2 - 36\delta^2 = 0 \\ & = -9\delta^2 (m + 20 - 0) \\ & = -m^2 \cdot (0, 2 \pm \sqrt{8}\delta) \\ & = -3 \cdot$$

$$= \frac{1}{2B^{2} + 1} \frac{1}{S^{2}} \left[ (108 \times 1) - \frac{86}{5^{2}} - \frac{36}{3} \right]^{-1} (e^{x})$$

$$= \frac{35}{24} \left[ -\frac{36}{3} - \frac{1}{3} (e^{x}) - \frac{36}{5^{2}} \right]^{2} \left[ -\frac{36}{3} \left[ -\frac{3}{3} (e^{x}) - \frac{36}{5^{2}} \right]$$

$$= \iint \left[ 85Z - \frac{2}{3} \right] 25 \text{ as}$$

$$= 66 \left[ \frac{1}{(4)(5)} - \frac{2}{3} (e^{x}) \right]^{2} - 8x^{2} - 12x^{2}$$

-მშ. (94.08)

The differential container is 3g(7g) = 2fg(2g + 1)

ി കൊടിച്ചു ആണ് വേട

$$2\pi^2 + 3 = 0$$
  
 $e^{-2\pi} + 3 = 0$   
 $e^{-2\pi} + 3 = 0$ 

Setupon to  $y = c_0 \cdot c_0$  for a |g| girls.

green (hangs), fil

A 
$$f = a$$
  
 $X = 5 c_{2} \cos 3x$   
 $V(0) = 2005$   
 $2000 = 0 + 3 c_{2}$   
 $c_{1} = \frac{8000}{3}$   
A  $c_{2} = \frac{2000}{3} \cos 3x$   
when  $x = 19 + \frac{2000}{3} \cos 5 = 84.09$ 

$$y'(x, Y) = \frac{1}{1 + 2x_1^2 + 3x_2^2 + 4x_1 \cos 2x_1^2}$$
  
=  $\frac{1}{1 + 3x_2^2} + \frac{1}{1 + 3x_2^2} + \frac{1}{1 + 3x_2^2}$   
 $\frac{1}{1 + 3x_2^2 + 3x_2$ 

Egiplique pre given offerenza, coubliou nel no erra li uni

### 원년, (점)

Indian orași de erași lită î

$$\begin{aligned} |f|^2 &= \phi \left( \frac{\partial f}{\partial t} + \delta + f + g + g + g + g + g \right) \\ &= \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} \\ &= \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} \\ &= \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} \\ &= \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} + \frac{\partial f}{\partial t} \\ &= \frac{\partial f}{\partial t} + \frac{\partial f}{\partial$$

$$e^{2(r-q)\hat{p}^{*}\hat{q}^{*}} = \left[ (r-q)^{\frac{1}{2}} \right]$$

Holling on 18,

$$\begin{aligned} & \lambda \Big[\frac{2}{r^2} - \omega_0^2\Big]^2 = \int_{-\frac{r^2}{r^2}}^{-\frac{r^2}{r^2}} \frac{1}{|\omega|} \Big[e^2 - e^2\Big]^{\frac{r^2}{r^2}} dx \\ & \frac{1}{r^2} + \frac{\int_{-\frac{r^2}{r^2}}^{-\frac{r^2}{r^2}} \frac{1}{|\omega|^2} + \frac{r^2}{r^2} \frac{1}{|\omega|^2} \frac{1}{|\omega|^2}}{\Big[e^2 - \omega_0^2\Big]^{\frac{r^2}{r^2}}} + \frac{r^2}{\Big[e^2 - \omega_0^2\Big]^{\frac{r^2}{r^2}}} \end{aligned}$$

The solution exists 
$$V_{\rm tot}$$
 ,  $A=0$  and  $C$ 

Налос aglion (су в селине

ழந்துத்தார் அள்ளவும் நடி operation அசெய்விக்கிற about  $\Psi \approx (-3)$ 

### 69. (a)

The galves solution of the different a covation

$$\frac{\sigma^2 v}{2\sigma^2} + \epsilon \frac{\sigma v}{2\sigma} + 5 v = 0.$$

$$(26 + 2\omega + 5)y = 0$$

A willary couplion to

$$\begin{aligned} & q_{1}^{(1)} + 2\alpha_{1} = 2 + \alpha_{2} \\ & = 2 + \sqrt{2} \left( \frac{1}{2} \frac{1}{2} + \frac{1}{2} \frac{1}{2} \frac{1}{2} \right) = 1 + \sqrt{6} \end{aligned}$$

Similarly 
$$\varphi = \chi_{\mathcal{S}} (1 - \mathcal{F}_{\mathcal{S}}) \frac{1}{100 g} f^{1 + 20 p}$$

### {a; 76.

$$\frac{d\mathcal{G}}{dt} = \{ \psi \in \mathcal{G} \mid \psi \in \mathcal{G}^{2} \} \qquad ... \}$$

$$\frac{1}{1 - \frac{2\pi}{2\pi}} = \frac{2\pi}{2\pi}$$

$$-\frac{2y}{2x} = \frac{xy}{x^2x} + 1 \qquad ...(0)$$

Substituting a parismonth and this recent (1911)

$$\frac{dt}{ds} = y = z -$$

$$\frac{|\phi\rangle}{|\beta|+1} = 2a$$

progra, policeto a dal

$$\int_{\frac{1}{2} + 1}^{1} dx = \int dx$$

$$\sin^{-1} x + 0$$

$$3 \cos^{-1} (-x + y + 1)$$

$$\therefore \tan^{-1} (x + y + 1) = x + 0$$

$$x = y - 1 = lon(x - x)$$
  
 $y = 1 - x + lon(x + x)$ 

$$y^2 = 2y^2 + 8y + 2y - 2y - 2y^2$$
  
 $(5^2 - 42) = 3(y + 2) + 3(x^2 - 2y^2)$ 

$$\begin{aligned} \mathbf{r}.\mathbf{I} &= \frac{1}{D^2 - 4D - 2^2} (2t - 2^2) \\ &= \frac{1}{2} (1 - D) (3 - D) (2t - 2^2) \end{aligned}$$

$$= \left(\frac{1/2}{1-\alpha^2}, \frac{1/2}{2-C}\right) \left(2(1+\alpha)^2\right)$$

$$\begin{split} & = \frac{1}{2} (1 - D)^{2} \left[ (B - 2C^{2}) + \frac{1}{6} (1 + \frac{D}{3}) + (21 - 3C^{2}) + \frac{1}{3} (1 + D - C^{2}) (21 - 2C^{2}) + (\frac{D}{3} + \frac{D}{3}) + (\frac{D}{3} + \frac{D}{3}) (A + A^{2}) + \frac{1}{3} (B^{2} - 3C^{2}) + C(B^{2} + D^{2}) (A + D^{2}) (B^{2} - 3C^{2}) + \frac{1}{3} $

(2. (D)

$$\frac{\partial \mathcal{O}}{\partial t} + \mathcal{O} = 1$$

Gert swing with a armaid lygo

$$\begin{aligned} O(u) &= \int \operatorname{Pe}^{t} Q_{t}^{t} \\ &= \partial_{t} + \partial_{t} \\ O(t) &= \partial_{t} e^{t} \end{aligned} \tag{7}$$
 When  $t = 0$ ,  $t \in \mathcal{Q} = 0$ 

$$\Rightarrow \qquad \quad 0 \quad \ 1 = 0$$

Thursdom ((g= 1 = 4))

73 Sel.

$$m = S \log_{\mathbb{R}} |V_{0}| = -12 \text{ myson}$$
$$\int_{\mathbb{R}} P(y\phi) = cr(V - V_{0})$$

$$\frac{2}{2}(x^2xx^2 + 2)(Y - X_0)$$

$$\frac{2}{2}f_0^2 + 2(Y - X_0)$$

74. (b)

$$|A - \partial t - \nabla A^2 - \nabla Q + 2(q^2 - q)|^2$$
$$+ |A + C - Q - \frac{q^2}{q^2 E^2 - 2(q^2 - q)^2}$$

 $z = (2x + 0)x + \sqrt{2(x + 2)(x^2 + 1)}$  of

Williams Chamily stopp

$$\label{eq:condition} 1.1 - 6.5 \, \mathrm{LH} \, (a - a) \, a = -6.5 \, \cdot \, \mathrm{DV} + \frac{a}{9} \, \mathrm{DV} + \frac{2}{9} (a)^2 - \frac{1}{2} \sqrt{a^2}$$

75. (c)

$$j=2r\frac{1j}{d_{ij}}$$

$$\alpha^{2} = \frac{2\pi}{3} \times \frac{1}{7\sqrt{3}} \gamma^{2}$$

$$||\alpha T| = \frac{1}{\sqrt{2}} \left( \frac{T}{\sqrt{2}T} ||\alpha T| + \frac{2T}{2T} \right)$$

$$\frac{6}{24 \times 80 \times 30} = \frac{6}{20}$$

$$\frac{50.5}{245000} \frac{1}{60} = \frac{60}{1}$$

$$\frac{\partial \Sigma}{\Sigma} = \frac{1}{\partial A \Omega}$$

$$\Delta' = \frac{1}{2900} \quad \text{new the pright length}$$



# Complex Functions

### 4.1 Introduction

Vary anguigating proviews may be implied and solved by mainth involving by more furnished and composition over There are two types of participated and the interest of the composition o

The second kind consists of more advanced problems for withouted note, by tending with the theory of complex subject for tions in real material building meanly for complex subjects for the first owner of each production of the complex subjects and a subject in the complex subjects and a subject in the case, expression of the case, expression and the case, expression an

We will assorted the importance of the non-expression between the given the matter rather which the world we make the M

- 1 The estimating magnitudes in the Analyte function are solutions will no acceptable in well proportion, value estimates for the country rate dimensional intension of colors of the medical content of the medical content of the content of the medical content of the content
- 8. Must light in notions to progress in given which is a condition on another roughly be not not a voluce of thomselves the technological section of the period control of the condition of th

# 4.2 Complex Functions

It of each value a the complex variable (1, 1 + k0) is a green region R, we have above the remark of |x| = k + 0. If the above sees the plant inches a Lagrangian  $k = k(k, k) + k(k, k) = \frac{k}{2}$  (where k is the remark one of  $k = k(k, k) + k(k, k) = \frac{k}{2}$  (where k is the remark one of k = k(k, k)).

The back value of x the entires conductive of  $x_i$  the value of  $x_i$  and wise extinction and explicitly for the example  $x_i$  the explication of  $x_i$  the explication of  $x_i$  the explication of  $x_i$  the former solution of the explicit  $x_i$  the explication of  $x_i$  the explication of  $x_i$  the explication of  $x_i$  the explication of  $x_i$  and  $x_i$  the explication of  $x_i$  and  $x_i$  and  $x_i$  and  $x_i$  and  $x_i$  and  $x_i$  and  $x_i$  the explication of  $x_i$  and  $x_i$  and  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  and  $x_i$  are the explication of  $x_i$  and  $x_i$  are the explic

# 4.2.1 Expenential Function of a Complex Variable

Where  $\alpha_{\rm BH}$  we also address so with  $\beta$  and a small function

$$|\phi| = -4\frac{2}{41}(\frac{\sqrt{2}}{91}) + 4\frac{\sqrt{2}}{91} + 399$$

Similarly we define the expression with function of the condition variable z=z+w as

graphes if 
$$\hat{q} = 1 + \frac{2}{\pi} \cdot \frac{2^{n}}{n!} = \frac{n}{n!} + \dots$$
 (7)

 $(y_0) \cap y \in \mathcal{S} \cap \mathcal{W} \cap \mathfrak{S}^{\mathfrak{S}}$  get  $x \in \mathfrak{S} \otimes \mathcal{S}$ 

$$40 - \frac{1}{4} = -\frac{(p' - \frac{(p')^2}{24} - \frac{(p')^2}{44} - \frac{(p')^2}{44} - \frac{(p')^2}{44})}{24} = -\infty$$

$$= \frac{2}{1 - \frac{y^2}{2!}} + \frac{y^2}{4!} + \dots \Big] + \frac{y^2}{5!} + \frac{y^2}{5!} = \frac{y^2}{5!} = \frac{1}{5!}$$

$$= \frac{1900}{5!} + \frac{2}{2!} + \frac{4}{4!} + \dots \Big] + \frac{y^2}{5!} + \frac{y^2}{5!} = \frac{1}{5!}$$

$$= \frac{2}{1900} + \frac{4}{1900} + \frac{4}{1$$

# 4.2.2 Circular Function of a Complex Variable

Fig. 6.2 
$$e^{x} = \cos y + \cos y$$
  
AV  $e^{x} = \cos y + \sin y$ 

The discretify of ensembled angles as the written ac

$$\mathrm{SF}(y) = \frac{|\Phi^{0} - \varphi|^{\frac{1}{2}}}{2\pi} \sup_{x \in \mathcal{X}} |\varphi(x)| + \frac{e^{2\pi} + e^{-2\pi}}{2} |\varphi(x)|$$

his the elementatic condition has insular functions of increasing objective zero constraints  $\mathbf{x}_{i}$ 

$$\Delta \Gamma (T) = \frac{\theta^T - e^{-i\theta}}{|\Delta|}, \ \cot \theta = \frac{\phi^T - \theta^{-i\theta}}{|D|}, \ \ \sin \theta = \frac{\sin \theta}{\cos \theta}$$

を集 cosed # 8+ Trans pollugs that the period 5-5 groca s

Con 1. Buildr's Theorem. By  $(99)\,\mu_{\rm LOO}$ 

$$\nabla P_{1} = 1.75 T_{2} = \frac{p^{2} - 1.7}{p_{1}^{2}} + \frac{e^{2} - e^{2}}{2!} = e^{2}$$
 where  $z = z + iy$ 

Place =0 have shown that  $sr = \cos y + 1 ax + vf$  encyclored

Thus  $\mathbf{s}^{\mathbf{r}} = \cos \mathbf{H} + \sin \mathbf{C}$  , where  $\mathbf{U}$  is reduced an energies. This is defined the Hilb fall  $\mathbf{H}$  is the  $\mathbf{H}$  in  $\mathbf{C}$ 

## Car. 2. De Molvres theorem for complex numbers.

Whether 9 is real procurates , you have

$$||(a \otimes b + b \otimes b^*)||^2 = ||(a \otimes b + b \otimes b^*)|^2 = ||(a \otimes b + b \otimes b^*)||^2 = ||(a \otimes b \otimes \otimes b \otimes b^*)||^2$$

Thus Do Morato's than all his interface (ministral reges).

## 4.2.3 Hyparbolic Functions

Def. in be maken and ex-

(ii) 
$$= \frac{g^2 + g^2}{2}$$
 is believe as two first land of yand is written as  $\sin \phi$ .

thy  $-\frac{C^2+C^2}{p}$  is defined at hypersocious support only and Now it will be the goality.

Thus, 
$$8t h_{x} = \frac{6^{2} - 6^{2}}{2} \text{ and } sgn_{x} = \frac{6^{2} + 5^{2}}{2}$$

$$2.90 \text{ we define} \qquad \frac{8t h_{x}}{\cos h_{x}} = \frac{8t h_{x}}{2^{2} + 5^{2}}, \text{ and } r = \frac{1}{\ln h_{x}} = \frac{\sigma}{\sigma} + \frac{\sigma}{\sigma}$$

$$-500N^{2} = \frac{1}{600 h_{\rm A}} = \frac{5}{2000 \, {\rm geV}^{2}} \cdot 6000 \, {\rm GeV} = \frac{1}{60000} = \frac{2}{60000}$$

Constraint the constraint of the constraint  $\theta$ 

2 = FeW is a Lebecth repositional cross state and

Since for all with exporting simple 
$$\frac{8^{10}-8^{10}}{2^{11}}$$
 ranging  $y = \frac{8^{10}+8^{10}}{2}$ 

y Firfing 8 – & two have

$$\sin h = \int \frac{d^2 - e^2}{2^2} = \int \frac{e^2 - e^2}{2^2} = \int h f e^2 - e^2 = e^2 f$$

$$= e^2 \frac{d^2 - e^2}{2^2} = e^2 f e^2 = e^2 f e^2$$

$$= \cos h = \int \frac{e^2 - e^2}{2} = e^2 f e^2 f e^2 = e^2 f e^2 f e^2 = e^2 f$$

### 4.2.4 Inverse Hyperbolic Functions

The figure  $f = f_0$  that the conjugate of the structure of the content of the structure of the structure  $f = f_0$  and  $f = f_0$ . The figure  $f = f_0$  is the structure of the

The true of reported a functions that of an exercit unchanged when executed, but we discuss a factor of the right policy law.

## 4.2.5Logar!thmic Function of a Complex Variable

DATE view of and we use by the whelm of that Minute instruments and object in the views.
 Date of which we have a logic zumit.

$$\frac{\log x}{\log x} = \frac{\log x}{\log x} + \frac{\log x}{\log x} + \frac{\log x}{\log x} = \frac{\log x}{\log x} + $

Let f be began to a management of the properties of the number of values  $x_1 \dots x_n$  for the content of the degree f and 
restrem() and 
$$\theta = 1$$
 ag  $(x - y) + 2$ , and  $\theta (y) + 3\theta$ .

Obe.

(a) If  $\theta = 0$  then  $\theta \cos \theta = 2\pi \sigma + \log \tau_0$ 

The state of the property of the best of the property of the p

on. We show that the local transfer expression and transfer less that between the  $x \in \mathbb{R}^{n \times n}$  and  $x \in \mathbb{R}^{n \times n}$ 

$$\begin{array}{lll} \log & \exp \left( (S) - \log (2) \right) \\ & + \log_2 2 - \log_2 (H) \\ & = \log_2 2 + \pi & \text{ If } = \log_2 \pi + (2\pi) - 2^5 \\ & = 3.506 + (20.14) \text{ of } \end{array}$$

(2.1) Nonlined maginary parabolic  $\chi(r+\eta)$ .

U. This and imaginary pairs of (4 + 39.9)

$$\begin{aligned} (0 + i) \mu + 2 & \quad \mu + i + (i + i) \\ & \quad + (i + i) \mu + 2 & \quad \mu + (i + i) \mu + i \\ & \quad + (i + i) \mu + 2 & \quad \mu + (i + i) \mu + i \\ & \quad + (i + i) \mu + 2 & \quad \mu + (i + i) \mu + i \\ & \quad + (i + i) \mu + 2 & \quad \mu^2 + i \\ & \quad + (i + i) \mu + 2 & \quad \mu^2 + i \\ & \quad + (i + i) \mu + 2 & \quad \mu^2 + i \\ & \quad + (i + i) \mu + 2 & \quad \mu^2 + i \\ & \quad + (i + i) \mu + 2 & \quad \mu^2 + i \\ & \quad + (i + i) \mu + 2 & \quad \mu^2 + 2 & \quad \mu^2 + i \\ & \quad + (i + i) \mu + 2 & \quad \mu^2 + 2 & \quad \mu^2 + i \\ & \quad + (i + i) \mu + 2 & \quad \mu^2 $

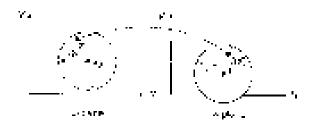
# 4.3 Limit of a Complex Function

After the  $\mathbf{e} = (2)$  is seed in conditional to the first properties a per  $\mathbb{I}_{\mathbf{q}_{\mathbf{q}}}$  interrection we condition that provides real parameters.

$$\ell(z) + I \cdot z = \ell(z - |z| \cdot |z| \cdot |z| \cdot |z|$$

e. In every z + z, in the Alideo (diether) of zightness (z) has a value thing in the explanation required (by the probability combots, we called  $\frac{1}{2}$  , R(z) = t

The velocent timb though an isomorphism in ordinary colours is out-offered twinty as in each section  $a_0(a_0)$  from the  $a_0(a_0)$  and the whole set is a veloce of the  $a_0(a_0)$  from the disconnection of  $a_0(a_0)$ .



Continuity of 55). An extra x=0.0 is say to be continuous in  $z-z_0$  if

$$\lfloor \Omega_{1}/\Omega_{1} \rfloor = 0.49$$

urber (at 5.5%) to be useful qualities were general to a plane, it is also to the energy per live 开西 第 per

A  $a \in \mathbb{N}$  which is a positive and a sum of  $a \in \mathbb{Z}_2$  , on this  $y_1$  and we write a solution of  $a \in \mathbb{Z}$ , the distribution of  $y_2 \in \mathbb{Z}$ , the distribution of  $y_2 \in \mathbb{Z}$  then define a solution  $a \in \mathbb{Z}$ , the distribution  $a \in \mathbb{Z}$ .

### 4.4 Singularity

A productive whole a function of this non-surjective single about this regularity point. Example the  $t_0$  with  $t_0$ 

### 4.4.1 Isolated Singular Point

 $^{2}Z$  = 315 4.5 Equilibrily of  $\{Z\}$  and A ere is no other singularity with in a small or self-and ording together A 1949. Here X such as became is a above singularity of the A potentially concressed is defined in a state.

Exprope tiethorizable  $\frac{1}{(z-b)(z-b)}$  , notice a without straight yy (is  $z^*z-1,z=0$ .)

$$\lim_{t\to\infty}\sup_{t\to\infty}\frac{1}{\sup_{t\to t} e_t}=0, \ e_t, \frac{\pi}{2}, \ \exp_{t\to\infty} m = -\frac{1}{2^n}[n-1,2,n],$$

) lete z = 0 is the special charge sub-

## 4.4.2 Essential Singularity

р де јуж бал фијала рокаже и стрев оброње 1940.

$$|h_{Z_{i}^{0}}| = ||u_{i}| + |u_{i}|(x - x_{i}^{0} + x_{i}) Z - u_{i}^{0}|^{2} \dots + \frac{v_{i}}{|x - u|} - \frac{v_{i}}{|x - u|} x$$

ji giliye pilika provinin dagangga likegi min ili 1955 zirilana deketiran 48 sirilah angalang

### 4.4.3 Removable Singularity

$$|f'| = \sum_{n=0}^{\infty} \exp(x - x)^n$$

made trablis by repyioling (ii) fulfilling (b) I [四代] exist

From the  $|p(z)| = \frac{8||y(z-z)||}{|z-z|} ||y(z)||_{L^{2}(\mathbb{R}^{2})} + c^{2} d^{2} e^{-i||y(z-z)||}$ 

### 4.4.4 Steps to Find Singularity

Step-ic if  $\lim_{t\to\infty} \widetilde{\ell}(u)$  rights and is in to the . The all removable singular paths.

Step- $\mathbf{z}$  if  $\lim_{t\to\infty} f(\mathbf{z})$  does not expect the  $|\mathbf{z}|$  without essential single t in  $\mathbf{z}^2$ .

step  $\mathbf{z}_i = \inf_{\mathbf{z} \in \mathcal{S}_i} \mathbf{z}_i \otimes_{\mathbf{z} \in \mathcal{S}_i} \mathbf{z}_i \otimes_{\mathbf{z} \in \mathcal{S}_i} \mathbf{z}_i$  in the proof of f is part a soft of  $\mathbf{z}_i$  in the proof of f is part as soft of  $\mathbf{z}_i$  and  $\mathbf{z}_i$  $\mu_{\rm CMB}$  , and a comparison property of  $\mu_{\rm CMB}$  ,  $\mu_{\rm CMB}$  and  $\mu_{\rm CMB}$  and  $\mu_{\rm CMB}$ 

## 4.5 Derivative of f(z)

 $\omega(w + ig) + s + i \epsilon_0 r + s$  and the probability we shall z + v + ig. Let v + i r v + ig + i s + i r vio bo

$$\frac{\partial \mathcal{D}}{\partial z} = \mathcal{D}(\mathcal{F}) = \frac{1}{2z + 0} \frac{\partial \mathcal{F}}{\partial z} \frac{\partial z + z(z)}{\partial z}$$

$$= \frac{1}{2z + 0} \frac{\partial z}{\partial z} \frac{\partial z}{\partial z} + \frac{1}{2z + 0} \frac{\partial z}{\partial z}$$

$$= \frac{1}{2z + 0} \frac{\partial z}{\partial z} \frac{\partial z}{\partial z} + \frac{1}{2z + 0} \frac{\partial z}{\partial z}$$

$$= \frac{1}{2z + 0} \frac{\partial z}{\partial z} \frac{\partial z}{\partial z} + \frac{1}{2z + 0} \frac{\partial z}{\partial z}$$

$$= \frac{1}{2z + 0} \frac{\partial z}{\partial z} \frac{\partial z}{\partial z} + \frac{1}{2z + 0} \frac{\partial z}{\partial z} + \frac{1}{2z + 0} \frac{\partial z}{\partial z}$$

$$= \frac{1}{2z + 0} \frac{\partial z}{\partial z} \frac{\partial z}{\partial z} + \frac{1}{2z + 0} \frac{\partial z}{\partial z} + \frac{\partial z}{\partial z} + \frac{1}{2z + 0} \frac{\partial z}{\partial z} + \frac{\partial z}$$

a system. While textols and income we re-value for a lift a discount  $w_{XX}$  in which  $\delta$  the group resonant

Supervise statilis fiscal and  $\mathbb{Q}(x+\delta z)$  is a neighboring z(x) . (Figure z(x) we), the conflict may z(y) :z(x) . o or  $\phi$  and short the curved path in the given region in a partial for a  $\phi$  and the region  $\phi$  is a partial region of exists in the service is a server exist undermonitor prominent to deserving the independent varieties in the interpretations of contractions and the interpretation of the inter CLIC CASA The race disallient by the leftering manning

**Theorem.** The reconstray and a finite found for the first variety (i) by this tion  $x = \max_{i \in \mathcal{N}} y_i \cdot X_{X_i, \mathcal{N}} - X_i X_i$ to the first reduced by the top on Alisa-

$$1 = \frac{\delta a^{-\frac{1}{2}} (-\delta x^{-\frac{1}{2}} y^{-\frac{1}{2}} y^{-\frac{1}{2}} y^{-\frac{1}{2}} y^{-\frac{1}{2}} x^{-\frac{1}{2}} x^{-$$

$$\hat{z} = \frac{\delta u}{\omega} = \frac{\delta v}{\delta y}, \qquad \qquad \frac{\delta v}{\delta y} = \frac{4v}{\delta z}.$$

This Helicus in (ii) are sub-mass the left of the number although the continuous of the continuous transfer of the continuous tr

## 4.6 Analytic Functions

### 4.6.1 Analytic Functions

Afterwise M which is any  $\mu$  valued and postorior after  $q \mu$  derivative or interpretable x at z , prints of  $\mu$ toger  $\delta$  is self-that abalistic or diregular for  $\phi$  on  $\phi$  z a that eightn

A point  $a_i$  while the analysis function devices to proceeds a convertor is notice a  $R_i$  guar point of the iungis .

Trips I ക്രൂൻ നയാ തരുന്നു പ്രകാശം നോട്ടാൽ അന്റെ ഇടപ്പാൻ എ. ഉപത്തിച്ചു അംഗ്രഹ്ത്യ ആദ്യൻ ആദ്യൻ ഒരു വ from the renegle of the fit Content Figure 1. Squares

$$\frac{du}{ds} = \frac{\partial u}{\partial s} + i \frac{\partial u}{\partial s} = \frac{\partial u}{\partial s}$$
 (1)

ৰ্ম্ম কৰি  $\Rightarrow$  escary est আই কোন কৰু টাইৰ হ'লে। তাৰস্কালন ইন্দ্ৰ নাম  $\phi$  কৰি  $\Rightarrow$  espiration. The post-value of definition, above by

$$\hat{P}(z) = \frac{1}{2\pi} i \frac{\partial p}{\partial z} - i \frac{\partial p}{\partial z} + i \frac{\partial p}{\partial z} + \frac{\partial p}{\partial z} + i \frac{\partial p}{\partial z} - i e_{z} \cos z, \qquad (i.5)$$

$$\begin{aligned} \partial \mathbf{I} & = \frac{1}{L^2 + 0} \frac{\partial v_j}{\partial v_j} + v \frac{\partial v_j}{\partial v_j} \\ & = \frac{\partial v_j}{\partial v_j} \frac{\partial v_j}{\partial v_j} = \frac{\partial v_j}{\partial v_j} - v \frac{\partial v_j}{\partial v_j} - v \frac{\partial v_j}{\partial v_j} \end{aligned}$$
(4)

indirections that (it is yielded) an analytic turk till overeligated conjugate functions. The lie stick light, year Twice it , against that one is given by ,  $\phi$  O H equations of characters  $\phi$ 

## C-Menuations in Polar (com-

$$\frac{\partial u}{\partial x} = \frac{1}{2} \frac{\partial u}{\partial y}$$
$$= -i \frac{\partial u}{\partial y}$$

### Esample 1.

Let  $f = 2^n$  and f(x)

### Sulution:

 $\Phi_{ij} = (r_{ij}) 9.17^{2} \Phi_{ij} = -r_{ij}^{2}$ 

ളാന് പാവ്യകളാള ഇട്ടെയ്ക്ക് (ചാന് കോ ha an call derivatives are communicated at printed Hando Afra. ഇട്ടിൽ Johnsony മ

### Pxample 2.

If  $\mathbf{w} = a_0^2 \mathbf{q}$  and  $a_0 \mathbf{w}$  and  $a_0 \mathbf{w}$  in the  $\mathbf{w}$  are  $\mathbf{w}$  is the energy  $a_0$ 

### Sekallan:

From two 
$$w = \sqrt{r} \left( x + 2y \right)$$

$$= \frac{1}{2} r \left( \left( x^2 - y^2 \right) \right) \text{ for } - y w$$
so that
$$v = \frac{1}{2} l \left( y (x^2 - y^2) \right) \left( x + 2y \right)$$

$$v = \frac{1}{2} l \left( y (x^2 - y^2) \right) \left( x + 2y \right) = \frac{1}{2} l \left( y (x^2 - y^2) \right) \left( x + 2y \right) = \frac{1}{2} l \left( y (x^2 - y^2) \right) \left( x + 2y \right) = \frac{1}{2} l \left( y (x^2 - y^2) \right) \left( x + 2y \right) = \frac{1}{2} l \left( y (x^2 - y^2) \right) = \frac{1}{2} l \left( y (x^2 - y$$

Since the Couply Hernannie dua, unsie eix=1kile tour in socital de Nativez ale ou रोग ≋ब समय महोद्या हुए हो। Perge major stylk leveryeine eivsport din = 0.

$$\frac{\partial F}{\partial z} = \frac{\partial u}{\partial z} + i \frac{\partial v}{\partial z}$$

$$= \frac{v}{|z'| - v^{2}} + \frac{-v}{|z + i - v|^{2}} = \frac{v - i v}{(v + i - v)^{2}} + \frac{1}{(v + i - v)^{2}} + \frac{$$

called The pelodic of the portroit contribution is function of complex variable in inferior. A form to that of the derivative of a function of all and about about complex to sold particles and a function of the number of calculations of a complex function is supply to the number of the number of the different \$3.90 [435] at the ordinary way.

### 4.3.2 Harmonic Functions

Any number which sense to be participated with two HA IAI in a laboration.

If  $g_{21}=g_{11}$  is  $g_{22}$  equally then  $g_{21}=g_{12}=g_{21}$  is the formula  $\pi$  notions.

$$\frac{3p}{6p} = \frac{3p}{3p} \frac{3p}{4} + \frac{3p}{3p} \frac{3p}{6p}$$

Differentiating tasts is

Eifferen Caling war iliy

$$\frac{g^2 g}{M g} = \frac{3 N g}{m d g}$$

$$\frac{\lambda_{ij}^{2}}{\mu_{0}}=-\frac{\lambda_{ij}^{2}}{\lambda_{0}\lambda_{0}}$$

sidro lega kelga.

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} \to 0$$

Girl offy

$$\frac{\partial^2 \phi}{\partial x^2} - \frac{\phi^2 \phi}{\partial \phi^2} = 0.$$

Therefore but is and yor of one on offerences.

## 4.0.3 Orthogonal Curves

As 0.1595 cm and let + it they need to expression when they more collaborate at each of their point of the resolution.

withe point all investor in , an gent will will be purveying also perpendicular.

The Adalytic function  $f(\vec{x}) = \phi(x,y) + hr(x,y)$  consists on invertibles on one way,  $a(x,y) = a_x \cos(x,y) + a_y \sin(x)$  which form an emography ratio

$$Q_{F_{i}(f)} = 0$$

$$\frac{\partial u}{\partial u}\cdot \mathcal{D}+\frac{\partial u}{\partial v}\cdot \mathcal{D}^{+}=0$$

$$\frac{d\mathcal{F}}{dv} = -\frac{dv}{2m} / \frac{du}{dv} + 2\Omega_{\rm L}$$
 (679)

$$3(x,y) = x_0$$

$$\frac{\partial \mathbf{k}}{\partial x} \cdot \mathbf{p}_{x} = \frac{\partial \mathbf{p}}{\partial x} \cdot \mathbf{p}_{x} \qquad g.$$

$$\frac{\partial \varphi}{\partial x} = -\frac{\partial \varphi}{\partial x} / \frac{\partial \varphi}{\partial y} = i r_{\phi}$$
 (509)

brieffregens  $\gamma$ 

$$m_{\rm p} \approx \frac{1}{\epsilon} \left[ \frac{du}{du} / \frac{du^2}{dy} \right] \times \left[ -\frac{du}{du} / \frac{du}{dy} \right]$$

+31.3 with a for a range, of the ton

$$\frac{\partial x}{\partial z} = \frac{\partial (y / \partial y)}{\partial (y' / \partial y')} = \frac{\partial y}{\partial z}$$

- H · H

 $\Rightarrow \exists \exists s : (s \mapsto s)(r, \beta) = c \text{ and } c_{\beta}, s \models c_{\beta} \text{ are onnegonal.}$ 

## 4.7 Complex Integration

## 4.7.1 Line integral in the complex plane

As it below to be distinguish between defining integrals and in the integrals in the graph of the distribution of the distribu

Complex sets (a integrals tre-parted (complex) the integrals. They are whiten as

$$\int_{\mathbb{R}^n} f(x) dx$$

Here the integrand  $M_{\rm c}$  is they are overlap concurse Circle ( ). [48, ptone called the past of irregulation. Wit may горгове и, выстан шуул биу а рагатолы гергөөн (ali i к

$$y_1^{\alpha} = y_1^{\alpha} + y_2^{\alpha} + y_3^{\alpha}$$
 (4.5.1.2.0)

The sense of increasing  $\mu_{\rm S}$  is that the positive sense of C is always which all its www. It is identified

We assume  $\mathcal{O}_{\mathcal{A}}$  the exposition rate, that is, there is a non-induced to derivative  $Z \in \mathcal{S}_{\mathcal{A}}$  in each 

### 4.7.2 Defin(()on of the Complex Line Integral.

In signarity, when helps in covalus. Let C be a singular layer in the complex p are given by i , and c . ฟุติเตอ Glaconia (col- function golon (an casti g. esch pont : linit ฟุติ now cucolade (we "partition intro interval  $g \leq (\leq q + p)^{-1}$  by confor

$$(-1-a)^{2}$$
 .  $(-1)^{2}$   $(-a)^{2}$ 

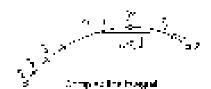
 $\frac{1}{2}(-k)(k) + \frac{1}{2}(-k)(k)$  where  $\frac{1}{2}(-k) = \frac{1}{2}(-k)$  is a factor correspondency as a supplication of CDs, yields

$$z_1, z_1, \dots, z_{n-1}, \dots, i \in \mathbb{Z}$$

where  $z_{i}$  ,  $Z_{i}(z)$  On each contour of acquisition of Z we choose an argularly z or 1.87% at 2.01% , 2.00% $_{\mathrm{SM}}(1)$  that  $g_{i}(\xi)=\inf_{t\in\mathbb{R}}(g_{i})$  and  $g_{i}(g_{i})$  is  $g_{i}(g_{i})$  a point 0 , becover  $x_{i}$  and  $y_{i}$  that then two form  $t\mapsto s(t)$ 

$$|Z_{i}\rangle = -\sum_{i=1}^{n} |\eta \, \mathcal{L}_{i}\rangle \Delta \mathcal{Z}_{i,j} \qquad \qquad \text{where } \Delta \mathcal{L}_{i,j} = \mathcal{Z}_{i,j} - \mathcal{Z}_{i,j,j}.$$

We as this for each  $n=2,2,\cdots$  in site of quality independent symmetric by twick the first policy is  $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}$ nystength or the smooth China  $u_{ij}$  to the smooth outstanding by a new responsible conduction amonth outstands. n conductor  $p_{ij}$  on a full The Yield of the sequestic with a not be a runded a  $\mathcal{S}_{ij}$   $\mathcal{S}_{ij}$  v , v octoined a control in  $oldsymbol{\mathsf{I}}$  ne integral Australia integral of titlings. The cherical curvaturities



 $_{
m CO}$  we  $\Omega$  is called path of  $_{
m CO}$  agration. The the integral is derived if  $_{
m CO}$ 

$$(g) = -\int_{\mathbb{R}} \beta(x) dx, \ \ x = g_{T} \int_{\mathbb{R}} \beta(x) dx.$$

1.035 a blosed path (0.50 y  $\star$  set  $\rightarrow$  meal point  $\pm$  complete with its order point  $\pm_{\bullet}$  as  $1x \times 1x \times 1x$  and x‼ shocad corv≓i

Seriera) Asaumption. All active of magnetic into prompter the integrals all alabatimes to be piecewisa. smooth, that is, they consist of this yimone smooth curves for enterfalls and

## 4,7,3 First Method: Indefinite Integration and Substitution of Limits

This mothed is smilled the memoria, but is less goneral. If xnear chair to analytic to exist will be complaint  $\mathbf{g}$  )  $\mathbf{g}$   $\mathbf{g}$   $\mathbf{g}$   $\mathbf{h}$   $\mathbf{g}$  . Cination for formula from Salzu  $\mathbf{u}$   $\mathbf{s}$ 

$$\int_{\Omega} c(x)V(x) = |F(x)| + |G(x)| + |F(x)|$$

$$|F(x) - F(x)|$$

## Theorem 1: Undefinite Integration of analytic functions)

Let §This configure it is a surry connected demand. A some n D is saled simply connected this variable of SSS n on which excelled we estimate this interpretation of the following the interpretation D. The the section of the following D is a logarithm. As a function of D is a surrounding D in the following D in a surrounding D is a P(x) = (D) n D and P(x) = (D) n

$$\frac{z_1}{z_1} n - (\beta - F(z_1) - F(z_1))$$
 [1.  $(z_1 + z_2)$ ].

(flue that we can + the  $i_0$  and  $i_1$  instead of G cined we get these which the  $i_1$  gas of norm  $i_0$  to  $i_1$  is theorem with an index of the regular gradient.

Surpresentations and the essential in theorem in an earlier seem in Evaluable. Since analytic functions are all the overloom, and since differential florings with a connect in finding  $A_i$  (in a given  $A^{(i)} = B^{(i)}$ ) the mesent hidden along real absolute in, and

 $\Re (z)$  is enuly, we contact this factor of the partie (which is contactly through the  $(\omega)$ 

**Example 3.** 
$$\int_{0}^{\pi/2} e^{-2\pi i t} dt = 2\pi^{2/3} \frac{h^{-2\eta}}{h^{-2\eta}} = f(n^{-(k-1)} - e^{-(k-1)}) = 0$$

Since after period and high rate. He

## 4.7.4 Second Method: Use of a Representation of the Path

The method is the restricted to annurse that it is the source epices to any continuous and ones for a pri-

## Theorem 2; (integration by the use of the path)

While the process of smooth salls corresponds by  $z+z^{\prime}/\sqrt{\omega}$  are eight bounded a continuous angles of f . Figure

16) 
$$\int_{\mathbb{R}^{N}} f(x) = \int_{\mathbb{R}^{N}} f(x) f(x) \qquad \qquad \left(2 - \frac{f(x)}{N}\right)$$

Proof: The left size of (5) is pivor in too is of leather integrations if  $(p_1, p_2, p_3, p_4, p_4, p_5)$  and without  $p_1$  and  $p_2$  and  $p_3$  and  $p_4$  
 $e^{i\phi_0 + i\phi_0 + i\phi_0} = 1 + i\phi_0 +$ 

Du koguerda in (5)

$$\begin{split} \frac{\partial}{\partial t} \| T_{ij}^{(t)}(\Omega_{ij}^{(t)}(\Omega_{ij})) &= \int_{\Omega_{ij}}^{\Omega_{ij}} (\partial t) \left( e^{-\frac{i}{2} t} f_{ij}^{(t)}(\Omega_{ij}^{(t)} + e^{-\frac{i}{2} t} f_{ij}^{(t)}($$

### Steps in applying Theorem 2

- $\eta_{\rm c}$  . Representation with Contradition in Eq.(2.2), 2.25.
- $\mathbf{z} = ((a \text{ constants} \text{ derivative } \mathbf{Z}^{\mathbf{r}}) + \sigma^{-1}\mathbf{d}^{\mathbf{r}})$
- $\mathbf{z}_{i} = \mathcal{R}_{i}$  for  $\mathbf{z}_{i}$  for  $\mathbf{z}_{i}$  and  $\mathbf{z}_{i} = \mathcal{L}_{i}$  (see Eq. ( ) in which it follows:
- $q_{\rm s}$  . In the position P(z|G)Z(t) exponential to D

### Example 1.4 basic result integral of 1/2 shound the unit employed

Wald and are altered by Mizeruntered verise as a notifier of Small Procedual to Fan Door en (i). Real Land

$$\beta_{i,j}^{(n)} = p_{i,j}^{(n)} = p_{i,j}^{(n)} \qquad \qquad (if in entropy, country v. k. + s. +)$$

His  $\kappa$  alvery important result this constall need but to be

Solution: We may represent the into the + 7 in the form

$$S(t) = c(S(t+t)S(t) + S(t))$$
 (1)  $C(t) = c(S(t) + t)S(t)$ 

 $q_{ij}$ than i en nimer stabletet impgrozen och espende tulan i i dieleka nim tom Silb. Zt. De differentishet : 215 i en som nimer en div  $(g_{ij})_{i=1}$  ( $g_{ij}$ ), en hoe gan i min Silb result.

$$\int_{\mathbb{R}^{n}} \frac{dx}{|x|} = \int_{\mathbb{R}^{n}} dx^{n} \operatorname{d} x^{n} dx^{n} = \int_{\mathbb{R}^{n}} dt - 2\pi t^{n}$$

 $\beta_1 \mapsto 1$ . The Youthby unlog  $x(t) = \cos \beta$ . For  $\beta_1$ 

Simple connectedness is essential in Theorem 1. Location  $\{1\}$  in Theorem 1.  $\{0$  on Sign and Signary Special Signary  $\{1\}$  in  $\mathbb{Z}_{q} = \mathbb{Z}_{q}$  is a notine  $\{1\}$ . They are independently a very finite property of the Signary  $\{1\}$  on  $\mathbb{Z}_{q} = \mathbb{Z}_{q}$  and in  $\mathbb{Z}_{q} = \mathbb{Z}_{q}$  is a finite context conformal  $\mathbb{Z}_{q} = \mathbb{Z}_{q}$  that  $\mathbb{Z}_{q} = \mathbb{Z}_{q}$  is the signar of the context conformal  $\mathbb{Z}_{q} = \mathbb{Z}_{q}$  that  $\mathbb{Z}_{q} = \mathbb{Z}_{q}$  is the signar of the context of  $\mathbb{Z}_{q} = \mathbb{Z}_{q}$ .

manantu us see  $\frac{1}{2} e^2 e^2 e^2 = \frac{3}{2}$ , the seesance of the model the y-contributed

### Brampic 2: integral of integer powers

If  $x(x) = (x - x_0)^n$  where this x is teger at  $x_0 = x$  as the interpretable countered where x is the close 0 constitute of value contained  $x_0$  (Fig. 1 where)

Salations We may represent thin the form

$$Z(t) = Z + \operatorname{groce}_{t} \cap f \operatorname{sing}_{t} = \lambda + i\lambda^{2}$$
 
$$\qquad \qquad \qquad \iint_{\mathbb{R}^{n}} f(t) Z(t)$$

than we have

and bullain

$$\oint_{\Omega} (T - \sigma_{j})^{T} dt = \int_{0}^{\infty} \sigma^{2} e^{i \sigma_{j}} (p \theta^{2} d) + i \sigma^{2} \int_{0}^{\infty} e^{i \sigma_{j}} \nabla^{2} dt$$

 $g_{\rm S}$  the Therefore is that dother couple

$$\mathcal{Q}^{(m)} \stackrel{\text{l.s.}}{=} \frac{1}{p} \operatorname{QCG}(m_i + 1) (\mathcal{Q}_1^2 + 2) \int_{\mathbb{R}^2}^{\infty} \sin(p^m + 1) \mathcal{Q}_1^{(m)} = 0$$
 So the Theorem 1.

If  $\phi = 0$ , we have on the normal of some -2. We thus policy  $\pm \pi i$ . By its eject the compact of the property  $-2\pi i$  and  $-2\pi i$  and

(7) 
$$\frac{q_{1}(z-z_{2})^{2}az = \frac{12\pi z}{1} \qquad \text{for } z = q_{0}}{1} \qquad (pr = -1)\text{ and integers}$$

Department is pain, five compact very superformative. If we integrate a given it notion (diffront point) Z to a point  $r_i$  doing fills and sine. Let magnote of in general nevertible on salt each i it for every g is conjugate. ine integral depends not only on the endpointe of the path but in general also on the path realt. See the The boar play

## Exemple 3. Integral of a non-enalytic function. Dependence on pada

properties flux = Fa  $\nu$  ,  $\nu$  ,  $\nu$  ,  $\nu$  ,  $\nu$  ,  $\nu$ 

- Zhong Clin Egybelow,
- (ഗി പ്രാപ് ട്രാസ് അന്റെ നിക്കുന്നു ഗ്ര

### Solution:

(a)  $|\nabla S$  can be represented by  $|(\cdot)| + 20(0) \cdot (2010)$  table  $201 + 1 \cdot 2$  and  $4 \cdot 6 + 6 \cdot 6 + 6 \cdot 12$ . We also calculate.

$$= \int_{S} \delta(1 - 2\pi) d\tau = -\frac{1}{2} (1 - 2\pi) = \frac{1}{2} (1 - 2\pi) = \frac{1}{2$$

(A) Wannawingse,

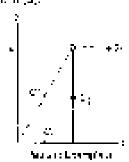
$$C \cdot B(t) = 0$$
  $Z(t) = 1 - 1(x, 0) = x(0 = t)$   $(0 \le x \le t)$ 

$$\begin{array}{lll} G_{2} = G_{2} + G_{3} & \qquad & G_{2} = G_{3} + G_{3} & & G_{3} = G_{3} \\ G_{2} = G_{3} + G_{3} & & & G_{3} = G_{3} + G_{3} & & G_{3} = G_{3} \\ \end{array}$$

We satisfie all gipes that ing the path Cirilbran online C is no  $C_2$  as all garpting of

$$\int_{\Omega} \mathbb{P} g(x) dx = \int_{\Omega} \mathbb{P} \pi \nabla g dt + \int_{\Omega} \mathbb{P} g(Z) dt = \int_{\Omega} g(Z) dt = \int_{\Omega} g(Z) dt = \int_{\Omega} g(Z) dt$$

Note that this the thickness is in the regular  $\mu_{0}$  ;



## 4.8 Cauchy's Theorem

If M(0,0) is an analytic burstion and M(0,0) continuous microthead of which we have seed gains  $C_{ij} (y_{ij} y_{j})$ [\_/.2/x2 **-** 0

 $\hat{\phi}(0) \cdot y \cdot \hat{\phi}(0) = \phi(x, y) + \phi(x, y)$  and hallog that  $\phi(x, y) = \phi(y, y)$ 

$$\int_{\mathbb{R}} f(x) dx = \int_{\mathbb{R}} (5dx - xdy) + \int_{\mathbb{R}} f(xdx + ydy) \qquad ...(4)$$

 $\text{FIGSE-$\tilde{Q}$ it is with the distributions.} \ \frac{dS_{1}}{dx_{1}}\frac{dx_{2}}{dx_{3}}\frac{dy_{2}}{dx_{3}}\frac{dy_{3}}{dy_{3}} \text{ with size of a number of the region 2 tens as convertible.}$ 

Lence the Greek's floorers can have plied by (i), giving

$$\int_{\mathbb{R}^{3}} a_{i} \mathbf{z} d\mathbf{z} = -\left[ \int_{\mathbb{R}^{3}} \left[ \frac{dx}{dx} + \frac{dx}{dy} \right] dx dy + \left[ \int_{\mathbb{R}^{3}} \frac{dx}{dy} + \frac{dy}{dy} \right] dx dy$$
 (ii)

have  $\delta \phi$  as against the band processority satisfy. In Contary Biometric contains the  $\lambda$  in Figure 18. Since the satisfy the two containing rate in the variety of the  $\lambda$ 

Tende 
$$\frac{12}{3}\sqrt{n}(\pi)\pi^{-1} = 10.$$

Described Equal  $\psi$  (length a similar transfer of a consequence of the constant of the restrict observe of the constant of th

Obs. 2 Establish at Cauchy's theorem. Take in analytic in the rough D between two ample proved contests of and  $S_0$  from  $\frac{1}{2} ((2)dz + \int_{\Omega} ((2)dz) dz$ .

opewed is, we need to introduce the crossical AB. The  $f_{ij}(ij) b$  is the vertex B is an introduced by a respect of state AB and AB are supported by a support of state AB and AB are supported by a supported AB and AB are

$$1+\left(\int_{\partial \mathcal{S}} f(z')\,dz'\right)\int_{\partial \mathcal{S}} f(z)dz'+\int_{\partial \mathcal{S}} f(z)dz''+\int_{\partial \mathcal{S}} f(z')dz''=0$$

Risk smoothe integral allows 4.5 and only, at tabout it follows the

$$\int_{\mathbb{R}^n} f(x) dx = \int_{\mathbb{R}^n} f(x) dx = 0.$$

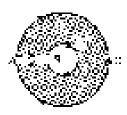
Devialising the direction of lab mesury  $A_i : i \neq i \in \mathbb{N}_i$  and mategory eq. we get

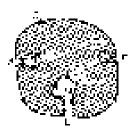
$$\int_{\mathbb{R}^{2}} f(z) dz = \int_{\mathbb{R}^{2}} f(z) dz$$

യയിടുകു പാലിച്ചു kwinin fic artii bicawisa sense

in  $D_{\mu} D_{\mu} \in \mathcal{C}_{V_{\mu}}$  , belong turned one conditions with  $|\mathcal{C}(T_{M})|$  a holosoften

$$\int_{\mathcal{O}} f(x) dx = - \int_{\mathcal{O}} f(x) (t-t) \int_{\mathcal{O}} f(x) dx + \int_{\mathcal{O}} f(x) dx$$





# 4.9 Cauchy's Integral Formula

begins an angly with the respective parameters  $a_{ij}$  and  $a_{ij}$  and  $a_{ij}$  with the first

$$\tilde{\pi}(x) = \frac{1}{2\pi i} \int_{-\infty}^{\infty} \frac{f(x)(x)}{1-x}$$

Consider the unique object which is trained and policy which descent the a will despite a sector and radius a grave small tile of the properties a a b a

Maxwed/azili at using energy: in the region and associated and  $\Omega$  , we have by wattery's these ans

$$\int_{0}^{1} \frac{dz_{n}^{2}}{2-z^{n}} dz = \frac{dz_{n}^{2}}{2-z^{n}} dz \qquad \qquad \begin{cases} \text{For any point on } \mathbb{S}_{0}, \\ z=z=z e^{2} \text{ and } zz=i e^{2} e z \end{cases}$$

$$= \int_{\Omega_0} \frac{d(g + ig^{(0)})}{dx^{k}} (g + ig^{(0)} g) = i \int_{\Omega_0} d(g + ig^{(0)}) g.$$
 (1)

T , C (Tiding form, as the virgle C strings to the point  $\mathbf{e}_i(\mathbf{e}_i|\mathbf{e}_k)$  , C integral above spokes  $\mathbf{e}_i$ 

$$\int_{\mathbb{R}^{N}}f(z)dt = -sf(z)\int_{0}^{\infty}d\theta = 2\pi h(z), \text{ this } \int_{0}^{\infty}\frac{f(z)}{z-h}dz = \operatorname{Su}(y)$$

1.5

$$M_{\rm c}^{\rm r} = \frac{1}{2\pi i} \int_{\Omega} \frac{h_{\rm c}^{\rm reg}}{Z_{\rm c}} dZ_{\rm c}^{\rm reg} dZ_{\rm c}^{\rm reg} = \frac{1}{2\pi i} \int_{\Omega} \frac{h_{\rm c}^{\rm reg}}{Z_{\rm c}} dZ_{\rm c}^{\rm reg} dZ_{\rm c}^{\rm reg$$

WENT is the desired Coupling From a Name Ja-

Con 71/4 → ti- ing dog g des anghar i an

$$f'(0) = -\frac{1}{2\pi d} \int_{\Omega} \frac{dt}{\partial u} \frac{f(x)}{z - x} dz = \frac{1}{2\pi d} \left( \frac{f(z)}{(z - y)^{2}} dz \right) \qquad ... (11)$$

Simples  $\alpha$ 

$$\frac{d^{2}(\mathbf{x}_{i})}{dt^{2}} = \frac{2}{2\pi^{2}} \int_{\mathbb{R}^{2}} \frac{\mathbf{r}(\mathbf{x}_{i})}{(1 - \mathbf{x}_{i})^{2}} \frac{d\mathbf{x}}{dt} \tag{2}$$

andinge east.

$$\frac{n_{T}(p)}{2\pi i} = \frac{1}{2\pi i} \int_{0}^{\infty} \frac{f(p)}{(p-p)^{1/2}} df \qquad ...(p)$$

The Cobos remits results  $\mathcal{P}(E_0)$ , all numbers of  $\mathbb{A}_{n}$  along the period strip  $a_{n}$ , and consider any  $a_{n}$  of the certifier results  $\mathbb{P}(E_0)$  and  $\mathbb{P}(E_0)$  and  $\mathbb{P}(E_0)$  and  $\mathbb{P}(E_0)$  are remarkable. For Eq. 2 analysis function possesses converges or at orders and trespond theoretics of an area of the property 
# 4.10 Series of Complex Terms

1. Taylor's series: if  $\ell(z)$  is an algorithm defined with metric  $g_{\ell}(z)$  from for z inside  $\ell_{g}$ 

$$\tilde{\theta}(Z) = \frac{d}{d}(I - r)/d(I - S) + \frac{r^2(S)}{2}(I - I)^2 + \dots + \frac{d^{2}(S)}{2}(1 - I)^{2} + \dots$$
(i)

**3. Laurents terioc** f(z) is a stylic in the ring on the Lie f because by two conserns and g of g if G . Since fixed g is the f and g is the ring of f in f.

$$\tilde{a}(1+2g_1+2g_2+3)+0.(1+2g_2+4)+0.(2+2g_1^2+3)_1(2+2g_2^2+4)^2$$

$$R_{i} = \frac{1}{2\pi i} \int_{\Omega} \frac{\partial \mathcal{L}_{i}}{\partial x + i \partial x^{(i)}} dx$$

Technically cone in Michaeling C.

Obs. 1. An (a) is smaller made, of there  $a_{ij} = \frac{1}{2\pi i} \frac{\partial}{\partial x_i} \frac{f(i)}{(i-g)^{n-1}} g_i^2 \leq \frac{\partial a_i g_i^2}{\partial x_i}$ 

However,  $\Pi(\pi) \ge \alpha w$  yield size  $C_0$  from  $x_0 = 0$ ,  $\alpha_0 = \frac{1}{2^{n+1}} \Phi \left( \frac{\eta(t)}{(t-\eta)^n} \right) \alpha t = \frac{C_0 d_0}{c_0}$ 

0110  $\pm 21.00$ 113 84 His reductions for paylons  $\chi_{\rm THH,0}$ 

Obs. 2. Identify: Thylore or Lauterits sales, an ely superiod at eviction to the application in the application.
I year proview recognition to senie by a complication.

obela, ha period costa a greca ana eta llano, en del millo simulus of les venga de la uributa i noto stata del di costa i puratticada otibizi in ste a si ci le tri i e se u e cente.

## 4,11 Zeros and Singularities or Poles of an Analytic Function

## 4.11.1 Zeros of an Analytic Function

**The time of the latter and the contract of the property of t** 

 $\|\mu_{A_0} - \mu_{A_0}\|_{L^\infty(\mathbb{R}^n)} \leq c_{n+1} + 0 \text{ that } a_1 \neq 0 \text{ than } d_2 x \text{ is said to have } x \neq x \text{ of } n + n \text{ said } x = 0.$ 

Where a=1 the a also appears to be simple. If the neighbourhood of c=a(a+a) of b 435 b 3.

$$\begin{aligned} f(x) &= [a_{i+1}(x) - a(x)] + a_{i+1}(1 - a(x)) + \cdots \\ &= [a_{i+1}(x) + b(x)] \\ f(x) &= [a_{i+1} - a_{i+1}] + (a_{i+1}(x)) = \end{aligned}$$

 $3.4 \times 3$ 

Then with standard enemonization  $J\in\operatorname{Highbound}(x)$  K

### Example 1.

### Pojes and Boantial singularities

Indirung, a r

$$\Delta Z = \frac{1}{2(z-z)^n} - \frac{1}{(z-y)^n}$$

руму у природных — Grandic pole of like order and и 2. Eva holes of fund and like wing an incitod pascribble King Jamy ut z = Up d

$$z^{(0)} = \sum_{n = 0}^{\infty} \frac{1}{n! x^n} = 1 + \frac{1}{2} + \frac{1}{2! x^n} + \cdots$$

$$z(x) = \sum_{n = 0}^{\infty} \frac{1}{(2\pi)!} \frac{1}{(2\pi)!} \frac{1}{(2\pi)!}$$

one:

$$=\frac{1}{2} - \frac{1}{3!2^2} - \frac{1}{5!2^4} - \frac{1}{4} \cdots$$

**Rate.** The presence of all givening and pakes and essential singular, as a not marely with the match present and electric standard promoted at the sense of a standard of the match and the match and the sense of a standard of the match and the sense of 
### Esemple 2.

Fig. (b) we show that notice fless on to low right unclusted

$$|m(t)|^2 (2t + \frac{1}{2(t-2)^2} + \frac{3}{(t-2)^2} + \frac{3}{(t-2)^2}$$
 (2t 2t)

### Example 3.

Fig. , with the one recallor of a rigidar topic that to twing turns and

(a) 
$$\frac{x - \sin x}{x}$$
 (b)  $(x + 1)\theta^{-x} \frac{1}{x - 2}$  (c)  $(x + 1)\theta^{-x} \frac{1}{x - 2}$ 

Schution:

(a) Here zie Siowanię dkiegi

$$\frac{-500Z}{2} = \frac{1}{z^2} \left[ z \cdot \left[ z \cdot \frac{z^2 - z^2 - z^2}{3z - 51 - z^2} \cdot z \cdot \frac{z^2}{3z} \right] \right]$$
$$= \frac{z}{3} \cdot \frac{z^2}{51} \cdot \frac{z^2}{7} - \frac{z$$

Since there are no negative powers of z in the appendix z=z are showned a matter  $\omega$ 

(b) 
$$(-1.7) \sin \frac{1}{\sqrt{-2}} = (r - 2.12) \sin \frac{1}{r}, \text{ where } r \cdot z = 2$$

$$= n + T \frac{1}{(r - 2.2)^2 + 0.2^2} \cdot \dots$$

$$= \left(1 + \frac{1}{3!n^2 + 3!n^2 + \dots}\right) \cdot \left(\frac{n}{r} - 9r\right) \cdot \left(\frac{9}{r} - \frac{1}{r}\right)$$

$$= \frac{1}{r} \cdot \frac{1}{3!^2 + 3!n^2 + 3!n^2 + \dots}$$

$$= -\frac{2}{r - 2} \cdot \frac{1}{r(1 - 2)^2} \cdot \frac{1}{2(1 - 2)^2} \cdot \dots$$

Notice that else in this is number of terms to the magnetic scheme of (1+2)/2=2 is enjaced and another two

(c) Tures of the  $\frac{1}{200 \, Z_{\odot} \, \mathrm{Mpc}}$  is Highwell by equating the context nation to zero. Let by 200  $\pi$  100 Z = 0.0 Help Z =  $\pi h$ . Use H Z =  $\pi h$  is a simple pane of h h

## 4.12 Residues

Figure 1.4  $(x_i,y_i)^2$  in the expansion  $m(x_i)$  at its interviewing unity element of the identity of the following  $(x_i,y_i)$  and  $(x_i,y_i)$  is the following  $(x_i,y_i)$  and  $(x_i,y_i)$  and  $(x_i,y_i)$  is   function of  $(x_i,y_i)$  and  $(x_i,y_i)$  in the following  $(x_i,y_i)$  is a function of  $(x_i,y_i)$  and  $(x_i,y_i)$  in the following  $(x_i,y_i)$  is a function of  $(x_i,y_i)$  and  $(x_i,y_i)$  in  $(x_i,y_i)$  is a function of  $(x_i,y_i)$  and  $(x_i,y_i)$  is a function of  $(x_i,y_i)$  and  $(x_i,y_i)$  is a function of  $(x_i,y_i)$  and  $(x_i,y_i)$  in  $(x_i,y_i)$  and  $(x_i,y_i)$  is a function of  $(x_i,y_i)$  and  $(x_i,y_i)$  is a

Since, 
$$\mathbf{x}_{t} = \frac{1}{2\pi i} \int_{\mathbb{R}^{n}} \frac{\mathbf{f}(t)}{(\mathbf{x}_{t}^{n})^{n+1}} d\mathbf{x}$$

$$... \qquad \mathbf{x}_{t} = \mathbf{Fe} \cdot \mathbf{f}(t) = \frac{1}{2\pi i x^{n+1}} \mathbf{f}(\mathbf{x}_{t}^{n})$$

$$... \qquad \int_{\mathbb{R}^{n}} \mathbf{f}(\mathbf{z}) d\mathbf{z} = 2\pi i \mathbf{Fe} \cdot \mathbf{f}(\mathbf{z}_{t}^{n})$$

$$(1)$$

### 4.12.1 Residue Theorem

If f(z) is enal-tid to a present the  $\phi$  discopplicit a title number of singless strink within  $C_0$  then  $\int_{\mathbb{R}^2} R z' dz = \Phi(z) (a) n \phi'$  the residued of the singular contact. In  $C_0$ 

Let us surjection each or the singular decision  $x_0, \dots, x_n$  by a small direction that the historia is not the surface of the second code of  $C_n(x_0, \dots, C_n)$  began to the first surface of the second code of the second



$$\int_{C} f(\mathbf{z}) d\mathbf{z} = \int_{C_{0}} f(\mathbf{z}) d\mathbf{z} \cdot \int_{C_{0}} f(\mathbf{z}) d\mathbf{z} + ... \int_{C_{0}} f(\mathbf{z}) d\mathbf{z} 
= 2\pi i \left[ \operatorname{Dyr} f(\mathbf{z}) + \operatorname{Pex} f(\mathbf{z}) + ... + \operatorname{Hot} f(\mathbf{z}_{0}) \right]$$
(Dy 0)

which is the decired regular

### 4,12,2 Celculation of Residues

T = -3/2 (red a simple to Heat x = 2, 1935).

$$\operatorname{Sign}(\mathcal{S}) = \inf_{x \in \mathcal{X}} [(x - x)f(x)] \qquad \qquad \dots 9)$$

La carriè per co in title caso  $\phi$ 

$$\beta(1) = \beta_{ij} + \gamma_i \left( z + w \right) + \epsilon \sqrt{z + G_i^2} \qquad C_{ij} (Z - S_i)^2$$

Mudahing intergrouply 2 is well-and

$$(z - z)/3z = c_1(z - y) + c_1(z - x)^2 + \cdots + c_{-1}$$

Taking it is expressed we get

$$\lim_{n\to\infty} |(z-2it'(1))| = |z_1| = \log k(\pi)$$

Anotherrormula for Pep Jaju

$$h(z) = \phi(\mathbb{E}(\phi(z))) + \eta(\phi(\phi)), \quad (1 + 0) F(1) H(0) A(0)$$

$$\begin{aligned} & \text{fight} & & \frac{1}{2} \left[ (1 + 2) h(Z_{i}/\psi_{i}^{(+)}) \right] & = \frac{1}{2} \left[ \frac{(2 + 3) \log(4) + (1 + 2) \psi_{i}^{(+)}(S_{i} + S_{i})}{\log(2) + (1 + 3) \psi_{i}^{(+)}(S_{i})} \right] \\ & = \underbrace{\text{Lit}}_{1 + \log(2)} \frac{k(Z_{i} + (2 + 3) \psi_{i}^{(+)}(S_{i}) + S_{i}^{(+)}(S_{i})}{\log(2) + (1 + 2) \psi_{i}^{(+)}(S_{i})} \right]_{1 + \log(2)} = 0 \end{aligned}$$

$$f(x) = \frac{d(0)}{d(0)} = \frac{d(0)}{d(0)}$$

 $3 + \lambda \log (h/s) \log g \log (c)$  thus in all  $\lambda = s/4$  for

$$|\operatorname{Res} f(z)| = \frac{1}{|z-z|^2} \frac{f^{\infty}}{|\alpha z|^2}, |(z-s)^2 f(z)|\Big|_{t=0}$$

Qbs. In the released, the recipule of a bole (1 + g) and (1 + g) which follows  $g = g \cdot (1 + g) \cdot (1 + g)$  and (1 + g). The property of the value  $g \cdot (1 + g)$  is  $g \cdot (1 + g)$ .



# 🌌 Provious CATE and USE Questions

Q.1 - One dealkow and table by of Occurs & Singley Local and the explored by to locate imagest show +io do wisa amuna Tierri i, groop g

Zoong a kanpleavonation indehalosidasi ge (a) (= 0) Simple Report of

$$\mathcal{F}(x) = 0 \text{ singular bossol} + 4 \frac{(n-1)}{2} + n + 0 \log 2 \frac{1}{n}$$

(a) 
$$z = \pi / 2$$
 angula dassa  $-\sqrt{z_0} \cdot \pi / \pi = 0$  (b), (

(a) None of above.

CF, SATE-9005, 2 marks)

 $Q\mathcal{F} = J(\mathcal{F})$  of Cauchy's a tegral frequent, the value of  $J(\mathcal{F})$ MAGNA Til egradon locing naturn fa

Fig. (4) a consequence containing 
$$\oint_{\mathbb{R}^n} \frac{1}{n} \frac{dx}{1+x} dx \cdot g$$

$$(40^{\circ} \frac{2\pi}{30} - 4\pi)^{\circ}$$

$$\mathfrak{g}^{*}(-\frac{n}{2}-i\delta\omega)$$

[CL, SAIE-7009, 2 nigibs]

OS Therefore Contour by  $\frac{1}{\sqrt{1-x}}$ filif Skirne vende ja

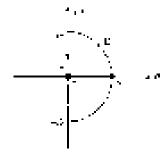
- (2) (3)2
- 批评 五型
- $\gamma \omega (-3\pi i 2)$
- in ray

EO, SATF-2008, 2 marks

- 0.1 15
- in they be
- of terms to

(EE, SATF-2007, 2 marks)

 $Q_{\rm c}\Delta$  . If the same finally contour S at rath  $g(S) \lesssim g_{\rm c}$ Stown fittefigue i en la oladischite in en e  $\frac{1}{2} \frac{1}{1 + \frac{1}{2}} \int_{0}^{2\pi} ds ds$ 



200

(S) 6

EC, SA = 2007, 2 mares1

0.8 . The irregral of  $2/6\pi$  such where 4 is  $0.099\,\mu p_{\rm c}$ 

215.0 em the samp daip\$and in [47:  $\pm \frac{724 \pm 1}{2}$ ] g.

- 141 Fe
- ijoi dea
- i.a. 15.
- AB (

MF\_GATE-2009, 2 marks].

**O.7. EVY As the rither**  $(1/2, 2\pi) \tilde{\eta} \hat{g} = \frac{1}{(2+3)^2(2-2)^2}$ 

- al a = 3 la
- (a) 35
- $\alpha \in \frac{1}{n}$

(FO SATE-2000, Surgice).

Qubit An energic function of a complex versity  $\epsilon$ = 3.4 (With expensions of f(X) = f(x, y) = f(x, y)of circle  $\sqrt{4\pi}$  . The High third consequency  $\mu$ ورز والرسوم

$$(C) = \frac{(1 + y)C}{1 + y} + x$$

$$|G|^2 \frac{(1+y)^2}{2} + \varepsilon \qquad \qquad |H|^2 \frac{|g|^2 - y^2}{2} + \varepsilon$$

$$\hat{g}_{ij} = \frac{e^{2i}}{i!} \left( e^{2i} - e^{2i} - e^{2i} - e^{2i} \right) = -100 \cdot \frac{\left( 1 - e^{2i} - e^{2i} - e^{2i} \right)}{2i!} \left( 1 - e^{2i} - e^$$

[MD, GATE 8889, 2 morks]

 $36 \frac{N_{\rm s}N_{\rm corr}}{30 \cdot N_{\rm corr}} = \frac{100 N_{\rm s}N_{\rm corr}}{30 \cdot N_{\rm corr}} = 0.0$ for ord C is a crossed curve given by  $\Gamma = 1$ ) is

$$\mathbb{Q}(\frac{2n\pi}{L})$$

[CE, GATE-2009, 2 marks]

Q.10 The smallest function  $|\psi_{z}\rangle = \frac{z-1}{z^{2}-4}$  bot o ngular like at.

- (a) and II.
- (5) and 9
- $\langle \sigma \rangle$  and  $\delta$
- (d(f(a)), -)

[QF, GATE-2009, 1 mark].

Q.31 (1.27) =  $S_{ij} + C.7$  (  $\pm cs = \int_{-\infty}^{\infty} \frac{1 - r(T)}{Z} dT dT$ 

- grade by
- (a)  $(2\pi C_1)$
- $\hat{u}\in \mathcal{B}_{C}(\mathbb{C}_{p})$
- $\begin{array}{l} -0.03 \pm (1+C_0) \\ -0.029 (1+C_0) \end{array}$

,E3, GALE 2000, 1 mark,

0.13. In Total us of the complex number  $\left| \frac{3 + 4n}{1 + 2n} \right| \approx$ 

- Cir.
- ica graje
- ்ப் ' ஒ

[ML, GATE-2016, 1 mark]

2.13 he residues of a compass in  $4 \cdot 11$ 

$$V(z) = \frac{1 - 2z}{\left(z - 1\right)_{i=1}^{n} - 2z} \Rightarrow Li \times z \Leftrightarrow x + \omega$$

- $\inf \left(\frac{1}{e^2}, \frac{1}{e^2} \operatorname{and} \right) = \inf \left(\frac{1}{e^2}, \frac{1}{e^2} \operatorname{and} \right)$
- (c)  $\frac{1}{5}$  and  $\frac{5}{5}$  (9)  $\frac{1}{5}$ , -5 600  $\frac{5}{5}$

\*[DD: CATE-2010, 2 marks].

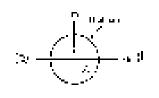
 14 Data (1994) : 10 color (9 + 6) (100, y) + 50 y; wis given by  $u = S \hat{\mathcal{A}} \cup S \hat{\mathcal{A}}$  , for expression for vconsidering (Challes a constant is:

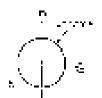
- $(a_1 \cup y' 2y' 2y' y_0) = (b) \cup (a_1 \cup y' 2y' y_0)$
- (y) (y + y + y + y) = f(y) (xy + y)

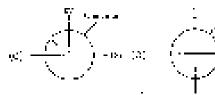
[QF, GATF-2011, 2 mark].

Q.15 A point and a bosin sight of the provided less earlier. استاجا وبروتان بيموا ولوو

Too a differenti  $\pm$  is







[EF\_QATF-2811, I\_marks]

G.18. Foredadoù Leinlegrer  $\oint \frac{2\pi + 4}{t^{-2}} dt = \text{fore}$ 

in. Tiagram by ръщертве:

- $g_{\alpha}(x) = 0$
- it; I: 2
- 1.6 × (5)

TEC 0ATE-2911 1 mark\*

Q.77 II x = 3 1. For the value  $x' \times 1$ 

- (g) | e | 81 |
- and the second
- 6. 8

EC. EL. N. CATE-2012, 1 mark)

**D**(19  $\otimes$  Very  $f(z) = \frac{1}{z_1}$ ,  $\frac{2}{z_1 + z_2}$ . If finish a contrary

, the keyseigner in the appearer such that (z+1)=1.

the value of  $\frac{1}{5-1}\frac{\partial}{\partial x}Q^{-1}dx$  is:

- 31 2
- i + 1
- 201
- (3) 2

FEC ELLIN, GATE-2012, 1 crank).

- **O.13** Solution consists  $\mathbf{u}$  where  $\mathbf{u} = \mathbf{u} + \mathbf{l}$  and

$$(b) \cdot \cos\left(\frac{\pi}{1-4}\right) + c \cdot \left(\frac{\pi \delta}{1-4} \cdot \cos\left(\frac{\delta \pi}{4}\right) + 1 + n \cdot \frac{\delta \pi}{4}\right)$$

$$(21 \cdot \log \left(\frac{\pi^2}{4} + sin\left(\frac{2\pi}{4}\right), \cos\left(\frac{3\pi}{4}\right)\right) \cdot sin\left(\frac{\pi}{4}\right)$$

$$\begin{aligned} \langle t, t \rangle &= \cos \left( \frac{\partial \mathbf{e}}{\partial t} \right) + 2 \sin \left( -\frac{\partial \mathbf{e}}{\partial t} \right) \cos \left( -\frac{\partial \mathbf{f}}{\partial t} \right) + \sin \left( \frac{\partial \mathbf{f}}{\partial t} \right) \\ &= (\text{FE. CATE-201J. 1. Mark}) \end{aligned}$$

- 🖺 20 The complex bin Yian Kinn (a) is an abin given a region di tro imaginno, avis trifto sonto estiglio e i Title follows are TRUL everywhere teacher safer. in all otherwise.
  - (a) Ha(a) = 0
- 1.80 (1.08) (1.5
- $|G| \cdot \ln(2) \neq \frac{\partial B}{\partial r} \qquad \qquad |G| \cdot \ln(2) \leq \frac{|G|^2}{r^2} \cdot \frac{|G|^2}{r^2}$

[IN, GAIE 8013 : 1 merk]

0.91  $\oint \frac{e^{x^2-x}}{x^2-x} dx$  exaltered multipolicities around the

a rote in 
$$|\mathbf{J} = 2|$$
 with  $\mathbf{s}^{-1} = \sqrt{-1}$ ,  $|\mathbf{s}|$ 

- iai —lr
- $(2\pi/2+\pi)$
- $(0,0) \geq t \leq 2$

IFF, CATF-2010, 2 Marks1

- **Q.22**  $z = \frac{S 3r}{c}$  can be explicated as
  - $0.0 \pm 0.5 \pm 0.5$
- $-(0) = 25 \pm 0.50$
- (2) 3.5 3.5 E
- $0.006 \pm 0.60$

:CE, GATF-2014 : 1 Merel

- Q.28 An arabitic function of a complete variable 2 = x + iy is expressed as  $f(x) = x(x) \cdot f(x) \cdot f(x) \cdot f(x)$ 
  - who the  $\sqrt{-1}$  . If  $|\psi_{ij}\rangle = \langle \psi_{ij} | \text{then } \langle \chi_{ij} | \psi_{ij} \rangle$
  - ĿΞ
  - (9)  $\mathbb{Z}^2 \times \mathbb{Z}^2 \times \mathbb{R}^2$
  - $\emptyset \otimes x^* = x^*$  is denoted:
  - $163 r^2 + f^2 g \log(gg)$
  - $|16\rangle = (2 + \sqrt{2} + 3) + g_2(g_1)$

[MF, GATE-2014 : 2 Marks]

Q 24 An exception unoffice of non-mass serial se- $X = Y + \delta f$  is expressed as  $X \cap f = 0$  in  $A + \infty(a, y)$ . ene e chi√−1 llutura e si rei mon ceprostina Ith May be in forms of a year discovering all pureyang ewoolb 59.

(4) 
$$ry = 0$$
 (5)  $\frac{r^2 - r^2}{2}$  (6)

$$\lim_{z\to z} 2cy - z = \lim_{z\to z} \frac{(z-z)^2}{z} + c$$

[ME, GATE-2014 : 2 Marks]

**Q.Sb.** The argument of the complex funder  $\frac{H_{1}}{H_{1}}$  , which

**14** 7

 $:: \frac{\pi}{\tau}$ 

[ME\_GATE/2014: 1 Mark].

 $\Omega$  28. A Sign the set of points in the optimizes page. across nording to the  $\epsilon$  , whole  $(\Psi_{i,k})$  is,  $S = \{z : z = 1\}$  Constanting function  $(z) = z^2$ withrough denotes the complex conjugated or it. The (z)in apo 3 to what lamp of the following in than throw three

- ing und chair.
- (b) her zonal tals, in a segment from edgines (1, 0).
- (c) the point (1, 0).
- (J) Telepti ethorizonatansi

[SE\_CATE-2014 - 1 Met 4]

- \$27. At the accuse of the multi-accuse complex binding.
  - Purchase  $z = \sqrt{1 + a z c}$
  - (but our dry integlinery)
  - (c) real and non negative
  - (s) on the unit order
  - (g) eggent leatern, it egitery tedal

FF, GA1F-2014 . 1 Mark)

CLSB. The moliport of an and crut function Arthrapese z=x it lights given by a fleeting. The imaginary  $(\omega)$  ,  $\phi'(S_Z)$  is:

- $(\omega_1,\omega_2^2+a)\omega_2^2+a$
- 1: 1 % t-i ([2])
- $\partial f(t) = (2 \cdot 3) \, \Gamma(t) \, f(t)$
- |(1.0) 22/6)|(2/8)|

EC, SAIE 2014 : 8 Marks)

 $\odot$  29 fig. is a complex variable, the value of  $\int_{-\infty}^{\infty} dz$ 

-60 - 0.851 - 0.571(4) = 0.511 = 1.576

car 3.54 - .552 -

(d) | 0.6 - 1.15.76

ME\_GA\_E 2014 : 2 Marks]

- Q(3)) integration of the only Partition and  $f(2) = \frac{e^{2\pi}}{e^{2\pi} + 1}$ 
  - in the occurationswise direction is root di [2-1 - 1 is
  - $\{0\} = 0$
- if() 3:
- idi a:
- ic) (%) [£1, GATE 2014 : 2 Marks]
- G.31 The Taylor series expension of 7 single 2 cos visi

$$4\pi(-2-2)=x^2-\frac{1}{2}$$

$$(g_{i}^{*})^{0} = (ax + a^{2} + \frac{a^{3}}{2} + a^{3})$$

$$(31.24) \times (3.13^{2})^{-\frac{2^{4}}{3}}$$

$$\langle \psi_{j}, V + \psi_{j} - \psi_{j}^{2} + \frac{\chi^{2}}{2} + \cdots$$

[EC, GATE-2014 : 2 Merke]

- $\mathbb{Q}(SC) \square \text{ as arise } \sum_{i=1}^{n} \frac{1}{n} \cdot \text{not verified on}$ 
  - $\langle t\rangle \geq i\pi/2$
- 7 July 15 TEU GATE 2014 : TMark)
- 0.33 Given two leading or numbers  $|x| = \delta + \left(\delta \sqrt{2}\right)^{2}$ :
  - and  $z_0 = \frac{2}{\sqrt{2}} + 27$  for a garment of  $\frac{z_1}{z_2}$  in degree
  - 121 11
- (±: ∞)
- iction
- .2. 00 101 90

IME GAIE 2018: I Marki

- © 34 Orem (2) = gr (+ 2) (, where (, gr the elouinple), valued functions on a complex variable z which one gr () be interval assigned as its TO . ™
  - (b) indizited formulable all z, over spizi and b(z) in a stational file relations.
  - (c) is q(z) and h(z) are differentiable as  $z_{ij}$  (then  $z_{ij}$  ) is a small theorem of the  $z_{ij}$
  - in Prop.) is extrainable at  $x_i$  then the confidence of an  $x_i$
  - icylli (jer s ciheremable alia , then eo are ile neklaro magi any na is

[66, SAIE 2015 : I Marki)

- C-SS Let 1 = r + ry hold nome as variable Consider that contain integration is performed John Indian on the John Mily I are of 1 eighty which enter in NOT TRUE?
  - can the residue of  $\frac{7}{z^2}$  of z = 1% 1/2
  - $(b)^{-\frac{1}{2}}e^{-\frac{1}{2}}\Delta z=0.$
  - $m(-\frac{1}{2\pi})^{\frac{1}{2}}\frac{d}{dx} = 1$
  - Aljum (demoles) een ligelo kriming enelyside. Cooksi

[ES, GATE-2015 : 1 Mark J.

Q.3E (  $m | dz) = \frac{dz - b}{dz - d}$  (  $h(z_i) = dz_i$ ) for  $d(z_i + z_j)$ 

s=2 ), and specified  $\sigma$  . Then  $\sigma$  is well be a  $\sigma\sigma$  in

EC, SATE 2015 : I Mark<sup>1</sup>

- $\mathbb{Q}(37/\Pi) \in \mathrm{val}(a,c) \oint \frac{1}{c} dz,$  where the schools is the
  - in Limb Loanwed clocky selic
  - (4) 50
- (E) 0
- (a) 257
- . (() 1±1 TN -04TE-2015 - 1 Mark
- Q.S6. The period of the property of the second property of the seco

valur untrescritatirisleares <u>1</u>.(Hel)TRM is EEC - GATS-2015 - 의 Merkel

CL39 (i.e. start) be of a loss with confiner, in the  $\gamma\gamma$  have well as a non-zero integer.

Breit 
$$\oint_{\mathbb{R}^n} \frac{\partial v}{(z-1)^{p+1}} (-1) v^{p} z$$

- $f_{\sigma} \in \mathcal{S}_{\sigma^{-1}}$
- 10.00
- 34 J
- 1. 1. 6. . .

[EC | GATE-2015 - 1 M44k]

O.43 Condition the following least presidential

$$\eta = j + \frac{\eta}{(z + (jz + 2)^2)}.$$

Which of the to being is taken fill enex (1987) the areas of the  $^{\circ}$ 

QA1 in the neighborhood witz = 1, the Junction (2) has a pa+a, correct expansion of the form

$$v(L) = 1 \quad \text{if} \quad Z_1 \quad \text{if} \quad Z_2^{N}$$

Lien Sztrai

(a) 
$$\frac{1}{z}$$
 (b)  $\frac{1}{z-y}$  (c)  $\frac{z}{z-z}$  (d)  $\frac{1}{2z-1}$  (9N, CATE-2016 , 1 Mark)

選 42 Consider the complex intuition 代わった程士 たけ<sup>3</sup> Apple XIS notion (e.g. siste) 日本の計画 (おでのわけれ) (p. tipo) (p. g. sign) で

[BC\_GATE-2016 : 1 Mark]

- **Q.**(3)  $f(x) = Q(x, y) + f(x) \cdot g(x)$  share the action of contribution for the x = x + (y, x) error for y = y + (y, y) and y = y + (y, y) from y(x) supposes the function y(x) = y + (y) is constant.
  - $\mathfrak{A}^{*}(\mathbb{R}^{n}) \times \mathbb{R}^{n}$  position.
  - (c) x' + y' + 00 els i.
  - $|0\rangle \cdot (e^{2} + e^{2}) = 2 \pi \sin \theta$

[MB, GATE-2018 . 1 Mark]

**Q.44** A function so the complex variable x = x + y + y + y. Upon the A(x, y) = a(x, y) + a(y), where A(x, y) = 2 explains A(y) = 2 evaluable A(y) = 2 and the A(y) = 2 and the A(y) = 2

ME (3ATE-2019 1 Mark)

- O 45 Corleider menunchen Az) zim zitwhere nie b kwar pławicza aŁia wieliza cerwiedka complex kwaj goran Gliki i maliyitha ("tipak gij. 774, [%
  - (t) f(z) is defined in the second region
  - (z) r(zna communio e connot analytic
  - (a) (b) so of sortingous busing analysis
  - $(0,0)(i_{N})$  is the contribution on size of

TEE, GATE 2016 : 1 Mark].

0.48 The vittle of the integral

$$\int_{-\infty}^{\infty} \frac{a \cap a}{a^2 + 2a + b} \, d^2a$$

0.00000001 0.000 0.000 integration and 0.00 0.000 0.000

$$\begin{array}{ll} \theta: & \frac{a \sin(\theta)}{c} & \text{ is: } \frac{a \cos(\theta)}{c} \\ > \theta: & \frac{\sin(\theta)}{c} & \text{ is: } \frac{\cos(\theta)}{c} \\ & \text{[NF. CATF-Poils + P Marks]} \end{array}$$

Q.47 Timodial Similary a

$$\hat{\varphi}_{\frac{1}{2},\frac{1}{2}+\frac{1}{2},\frac{1}{2}+\frac{1}{2}+\frac{1}{2}} \text{ of }$$

invertigio a Equ<sup>1</sup> (il 11) svenir il ser te a over se idmotor, would be

(c) 
$$\frac{24 \text{ ms}}{15}$$
 (c)  $\frac{48 \text{ ms}}{3}$  (c)  $\frac{64}{3}$  (d)  $\frac{64}{3}$  (e)  $\frac{6}{3}$  (e)  $\frac{6}{2}$  [EE, 0ATC-2016, 1 Verk]

Q.48 To a variable for the  $(x + y) = \frac{1}{2N_0^2} \frac{2^{1/2}}{2^{1/2}} \frac{24}{12} \exp(x^2 + y^2)$ 

**Q.86** (the obtase of the integral  $\frac{1}{2\pi i} \oint \frac{dr}{dr-2} dr dr dy e$ 

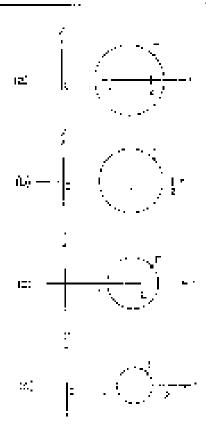
all recovered in the present of the edge of monoton

- (i) The about  $\lambda_i \geq 2$  is a online confound and
- (with a point  $\chi_{ij}=0$  outside the contour  $x_i$  respectively, are
- (a) (i) 2.72 (ii) U
- $\{(\hat{\boldsymbol{\mu}}_{i}(\boldsymbol{\theta})) \in \mathcal{M}_{i}(\boldsymbol{\theta})\}$
- (4)(7.4,46)277
- (J) 6; 0, 6::7,50.

[FIII GATE-2016 | 2 Marks]

 $\mathbb{Q}$  52 The white is  $\tilde{\mathbb{Q}} = \frac{\partial}{\partial x_1} \frac{\partial}{\partial x_2} \mathcal{Q}^{2}$  notices a score

indexn1 is is equal to (for) of each in a − /y a in − y Ts. The expression of Tis.



ME, SA = 2016 : 2 Marks)

- Q.53 if  $\hat{\eta}_{i}(g)$ ,  $\hat{\eta}_{i}^{(i)} = \hat{\eta}_{i}^{(i)} + \hat{\eta}_{i}^{(i)}$  is a complex analytic  $[\operatorname{Lip}_{\sigma}](y) = 0$  y = (y) where  $x : \pi \cdot \sqrt{2\pi}$ , then (a0, b) = -1, (a) = -1, (b) (a = -1, b = 2) $h_0(y = 1, 1, -2)$  (4) h = 2, h = 2ME, SA. = 2017 : 2 Marks)
- Q.52  $_{1/2}$ , x = y/2 where  $y = \sqrt{-1}$  for  $\sqrt{\cos x} =$ (b) ccs7. (91,005,0 Júliaja∑ 100 5 7 万
- © 66. The value of no confour integral in the complete. 3,800

$$\int_{0}^{1} \frac{1^{2} - 2 \cdot \cdots \cdot 2}{1 - 2} dz$$

along the corrote b = 2 taken countered to b = a

- ga) Hillard
- 41-10
- (c) 14 mi
- $6.5 \cdot 43 \pm c$

(FF\_QATE-2017\_2 Marks)

PN, GATE 8017 : 1 Mark)

5) 58 Pana camp extrumeer L

(40-2)

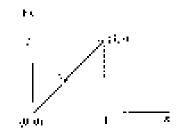
- ibo i
- (3)

29:59

idi Si

JEE, GATE-2017 : 1 Work)

**Q.57** Overvier the area ringed  $I = \int_{\mathbb{R}} b \hat{I} + b^2 \hat{I}^2 dt$  $p_{\mathsf{T}} \models_{\mathsf{T}} p_{\mathsf{T}} = q + q_{\mathsf{T}}$  Требов с в **врес**и и и ини бушта.



The value of it is

- $(0)^{\frac{2}{3}}$

EL, GATE-2017 : 7 Malkaj.

Q.58 from revalues on a function.

$$f(x) = \frac{1}{(x - a)(x + b)^2}$$

- $> \frac{-1}{27} \text{ gry } \frac{5^4}{325} \qquad \text{ for } \frac{1}{125} \text{ and } \frac{-1}{125}$
- (a)  $\frac{1}{2\pi} \operatorname{and} \frac{1}{\pi}$  (b)  $\frac{1}{2\pi \pi} \operatorname{and} \frac{1}{\pi}$

[00 GATE-2017 : I Mark]

2:63 An Physiol Sevens and the Checkers of the Cis-2291 Jy

$$t = \oint_{\mathbb{R}} \frac{2^d - 1}{2^{d-1}} t^d \rightleftharpoons$$

- If S is discrete as  $M = \mathbb{R}$  then the vertex M/M:
- 6 ( = na 311) ( )
- $1(5) 2\pi(8) \cdot (1)$
- $\hat{\phi}(\hat{\phi}) = \Re (\hat{\phi} + 2\hat{\phi}) + \Re (\hat{\phi} + 2\hat{\phi})$
- (d) 4m/se (f)
- FEC GATE-2017 2 Works

Q.60 ThY = ∮ 130 represents the complex desentations and facilities.

Given 
$$m=p^2+p^2+\frac{p}{p^2+p^2},$$
 , then the function  $\omega$ 

я

$$|S_{ij}| = 2 \epsilon_{ij} + \frac{2}{\epsilon^2 + \epsilon^2} \epsilon_{ij} + C$$

$$\lim_{t\to\infty} 2x_t + \frac{2}{2^2+p^2} + C$$

$$\gamma \in -2 \gamma_{\mathcal{F}} + \frac{\gamma}{\gamma_{\mathcal{F}}^2 + \gamma_{\mathcal{F}}^2} + C$$

$$y \in \mathcal{S}_{ij} + \frac{2}{z^2 + y^2} + C$$

[51728 amietfi [227]]

GLB1. The resid in of 
$$\eta(\vec{r}) = \frac{z^2}{(1-\theta)(z-\theta)(z-\theta)} \times (z-y)$$

i:

$$-(a) \frac{10}{12}$$

[FSF Frellma-2017]

## Answers Second Order Linear Pardal Differential Equations

**1** (a) 
$$(x_1 - x_2) = (x_1 - x_3) + (x_1 - x_4) + (x_2 - x_3) + (x_1 - x_4) + (x_2 - x_4) + (x_1 - x_4) + (x_1 - x_4) + (x_2 - x_4) + (x_1 -$$

59. 
$$(z)$$
 59.  $(z)$  32.  $(c)$  31.  $(d)$  32.  $(d)$  32.  $(d)$  83.  $(d)$  24.  $(c)$  35.  $(d)$  37.  $(d)$ 

## Explanations: Second Order Linear Partial Differential Equations

$$\int p(x,x)dx = \left(\frac{1}{\log x}dx\right)$$

The poles treat.

$$z = (c_1 + 2)z + ... + 2c_2 2 + c_3 + c_4 2 + 2c_4 2$$

Notice of the solutions is marks for unit and a limit of  $\alpha$ 

Halve the form of residues all points = 1.

Aingular topisch – diene

 $t = \pm \pi \left( s_1 p_1 \cdot g \right) \mapsto d \mapsto d \left( d / s_1 \right) \text{ or poles}$ 

$$=2\pi f \circ (1-\beta)$$

#### 2. (01)

Cauches Integra theorems

$$f(z) = \frac{1}{|Z_T|^2} \oint_{\mathbb{R}} \frac{f(z)}{|z-z|} dz^2$$

Let 
$$\oint_{\mathbb{R}^2} \frac{\widetilde{u}(\cdot)}{2\pi i \Re u} = 2\pi i \Re u$$

$$|\Phi_{FV}| = \frac{p^2 - 2}{\sqrt{2p - p}} \langle \Phi \rangle = \frac{1}{2p} \int_{\mathbb{R}^2} \frac{p^2}{\left(|\varphi|^2\right)^{1/2}} \frac{\partial}{\partial \varphi}$$

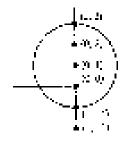
Anothing Couply's integral Terre in  $\pi \circ \Phi$ 

$$\begin{aligned} & \frac{4}{3} \mathcal{L} = 10 + 6 \\ & = \frac{1}{3} \left[ 2\pi i \left( \frac{1}{3} \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \frac{1}{3} \right) + \frac{1}{3} \frac{1}{3} \right] \\ & = \frac{1}{3} \left[ 2\pi i \left( \frac{13}{37} - 6 \right) \frac{2\pi}{34} \right] + \frac{1}{3} \frac{1}{3} \frac{1}{3} + \frac{1}{3} \frac{1}{3} \frac{1}{3} \\ & = \frac{3\pi}{34} \cdot 4\pi i \right] \end{aligned}$$

#### 8 (d)

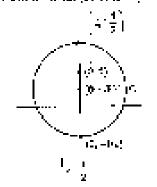
$$\frac{1}{\lambda^2 + 4} = \frac{1}{(\lambda + 2)(\lambda - 2)}$$

Fig. (c), 2) fig. (i.e. the first probability of p=2 , and a partial p=2 to outside the probability of p=2 , as contains a specific p=2 .



 $\int_{\mathbb{R}^n} \eta_{Z,T} g_{-T}^n = 2\pi i \left[ \mathrm{Resolute} \ \mathrm{cottnode} \ \mathrm{cottes} \ \mathrm{whol} \right]$  are include  $C_1'$ 

$$-2\omega \operatorname{Ret} \operatorname{Car}) = 2\omega \frac{1}{(2+\varepsilon)\delta} - \frac{\varepsilon}{2}$$



ਰਾਗਾ ਪ੍ਰਿਸ਼ਸ ਦੀ 2−92 − 1990+ 99 section se A (3−91 × 1 × 1) ਦੇ 14 ਵਿੱਚ white 99 ± 35, − 3 religible references

So 
$$3 - 2\pi i \operatorname{Rec}(6) = 2\pi i \frac{1}{(2\pi i)(6-1)} = 3$$

5. (a)

$$(-\beta)_{\{g^{(i)}\}} + \beta \delta - \beta \frac{1}{(s-1)^2} \frac{1}{(s-1)^2} \, ds$$

$$f = S_{max}(S_{0}, m) \cdot \log (\log g)$$

 $1^{444} s = 0^{11} s$  model notice the source  $D_{s} = 0$  , s = 1 . In this right

residuo of an  $4 \times 1.1 \lesssim$ 

$$= \lim_{s\to\infty} \frac{(s+j)}{(s+i)(s+i)} = \frac{1}{s^2}$$

$$= -\oint \frac{1}{Q^2 - f_1} ds = g_{21} \cdot \frac{1}{s} = g_1$$

6. (a)

$$(z) = \frac{\cos z}{z}$$

and simple pulse  $\lambda = \lambda \, 0$  and  $\lambda = 0$  is inside that

и Редрисот Ктулии I б

$$\frac{\int_{\mathbb{R}^n} f(z) dz}{z^{n+1}} = \lim_{z \to 0} \cos z = 1$$
$$= \int_{\mathbb{R}^n} f(z) dz = 2\pi^n (|\cos z| \cos z = 0)$$

$$= 2e^{\pi x} - 5e^{\pi x}$$
$$= 3e^{\pi x} + 6e^{\pi x}$$
 and  $\pi \times 4e^{\pi x}$ 

7. (6)

Since  $\frac{1}{x} \frac{1}{2} \frac{1}{2} \frac{((1-2)^2)^2}{2} \frac{1}{2} \frac{1}{2}$  is limite and non-zero

 $\{z\}$  has a pole of a terminal z = z

i haresi belahze ura gyantar apateshi ete i. as

Box 526 : 
$$\frac{1}{(5-7)} \left[ \frac{\pi^{0.5}}{6\pi^{0.5}} (x_1, x_1^{0.5})(y_1) \right]_{x_2 = 0}$$

Here n = 2/50 to or order Street n = 2.

$$\begin{aligned} & \left[ \log f(Z) = \frac{1}{6} \left[ \frac{|Z|}{|\partial z|} \left[ (z - Z)^2 f(Z) \right] \right] \right]_{z=0}^{z}, \\ & = \frac{|a|}{2Z} \left[ (z - z)^2 \frac{1}{(z - z)^2 (z - z)^2} \right] \end{aligned}$$

$$\begin{split} &= \left| \frac{|\mathcal{L}|}{|\mathcal{L}|} \right| \frac{1}{\left( -\beta \right)^2} = \sum_{|z|=0}^{n} = \left( -2 \left( z - \beta \right)^{n+1} \right) = \\ &= \frac{2}{\sqrt{2 - 2} z^2} = -\frac{3}{30} \end{split}$$

 $\delta = (g)$ 

$$f_{\mathcal{L}}=0$$
 . By distribution  $f_{\mathcal{L}}$ 

... ftm. 8-44 ix y the Cellully from panning terranic

$$P_{\mathbf{p}} = \mathbf{P}_{\mathbf{p}}, \qquad (1)$$

and 
$$\mathbf{v}_i = \hat{u}_i$$
 (a)

Here are using  $\mathbf{S} = \mathbf{A} \mathbf{y} \cdot \mathbf{g} \mathbf{N} \mathbf{z} \mathbf{n}$ :

$$\Rightarrow \qquad \qquad \gamma_j = p \text{ with } a_j = x$$

If  $C \in \mathbb{R}$  is that if  $g \in g$  and  $g_{G}(G) \cong g(G)$  we get

$$A_i = P \tag{m}$$

and  $\mathbf{t}' = \mathbf{t}$ 

THEORING (iii) DIG My SO SAN ACH BELVINS TOLGHS

$$\lambda_i = c$$

$$\implies \frac{g_F}{ds} = y$$

$$\Rightarrow [ay = i]ydy$$

$$y = \frac{p^2}{2} + \beta p_1^2 \qquad \dots p_n$$

TOTAL HAND DOVE

$$P = f(x) \qquad \dots + f(x)$$

Since by the workeys,

ducotuno), in alla (e) weiget,

$$f'(x) = -c$$

$$e^{\frac{2\pi i \pi}{2}} = -4.$$

$$\Rightarrow \int \mathcal{F} = \left[ -i \mathcal{L} \right]$$

$$- r = \frac{x^2}{2} - \epsilon$$

Now substitute this is (ii) we set,

$$\mathbf{v} = \frac{\mathbf{v}^2 - \mathbf{v}^2}{2} + \mathbf{v} - \mathbf{v} + \mathbf{v} + \frac{\mathbf{v}^2 + \mathbf{v}^2}{2} + \mathbf{v}$$

9. (6)

Here, 
$$\bar{z} = \int_{\mathcal{C}_{i}^{*}(Z,Z)} \frac{\partial \mathcal{D}(x,z)}{\partial z} \frac{1}{|z|} dz$$

$$=\frac{1}{2\pi^2}\begin{bmatrix}\frac{\cos(2\pi z)}{(z-z)}\\ (z-\frac{1}{z}\end{bmatrix}.$$

Since, z = 1.9 is a positive into |z| = 1 (Let  $k \approx 0$  on  $z \approx 0.3$  we during a Cabally in Hegge  $k \approx 0.0$  one can show that

$$x = \frac{1}{2} \frac{f(x)}{f(x)}$$

where 
$$-f(z) = \frac{\cos(2\pi z)}{(1-z)}$$

[Notice  $f(x_i, f(x))$  is suply a an all also happen  $|x|^2 = 1$ ].

$$x = -\frac{1}{2} \frac{\left| \cos \left( \frac{2\pi}{3} + \frac{\pi}{2} \right) \right|}{\left( \frac{\pi}{3} + \frac{\pi}{2} \right)} = \frac{2\pi}{3}$$

10. (d)

$$\P(z) = \frac{z^{-1}}{z^2 - z^2} \cdot \frac{z^{-1}}{z^2 - z^2} = \frac{z - 1}{(z - 0)(z - 0)}$$

The single if as one of zero and in

11. Id?

$$\Delta Z_i = Z_i + Z_i + Z_i + Z_i$$

$$\oint_{\mathbb{R}^{n-1}} \frac{1}{n} dx = 0$$

, we shall also not organisation is inside unit since

$$\begin{split} \mathcal{C}_{C_{1}}[\beta] & = \frac{2\pi i [(1+i) \log n)^{2} C_{2}(A), \quad \forall C_{3}(A), \quad \forall C_{4}(A), \quad \forall C_{5}(A), \quad \forall C_{5}(A), \quad \forall C_{5}(A), \quad \forall C_{5}(A), \quad C_{5}(A$$

12 (b)

$$2 = \frac{3 - 4\pi}{1 - 2\pi} + \frac{(3 + 4\pi)(1 - 2\pi)}{(1 - 2\pi)(1 + 2\pi)}$$
$$= \frac{-9\pi - 3\pi}{2} - 4 + 2\pi$$
$$= -\frac{\sqrt{(-7\pi^2 + (2\pi)^2 - \pi)^2}}{2} = 6\frac{3\pi}{2}$$

48 (c)

$$\Delta z_1' = \frac{1 - 2z}{\Delta z - 4((z - z'))}$$

$$zz_1 = 1 + z - 1 + z = 0$$

Realizate at z = 0

replike = 
$$\sqrt{4.16} \approx \frac{1-2}{(z-1)(z)} \cdot \frac{1}{(z)} \cdot 3.2 = 0$$
  
=  $\frac{1}{54} \cdot \frac{(z-3)}{100(-2)} = \frac{1}{2}$ 

Headubid z = 1

module = 
$$y_0 \in y^2 = \frac{1 + y_0 x}{\eta^2 - 2y} = 4(x - 1)$$
  
=  $\frac{1 - y_0 x}{0 + 2y} = 1$ 

Handur of z = 2

instance where 
$$|v| = \frac{1}{z(z)} \frac{0}{0}$$
 at  $z = 0$ 

$$= \frac{1}{3(z)} \frac{2}{3} = -\frac{2}{2}$$

. The light that of the poles are  $\frac{1}{2}$  it and  $\frac{3}{2}$ 

14. (d)

$$\frac{1}{10} = \frac{1}{2} \frac{1}{10} \frac{1}{10} \frac{1}{10} \frac{1}{10}$$

$$\frac{1}{10} = \frac{1}{2} \frac{1}{10} \frac{1}{1$$

tarinto bolarelysis (we "lava Cauchy d'ariel in candillers

$$\frac{3}{4}\frac{1}{2} = \frac{6\%}{6\%}$$
 ...(7)

$$\frac{d\Omega}{dz} = \frac{-i\omega}{dz} \qquad (40)$$

Throm (2) we have

$$||\dot{\omega}| = \frac{\delta V}{\delta y^2}$$

$$\Rightarrow \int \partial v = \int \theta r dy$$

$$v = \delta e v + r(x)$$

$$(c) \qquad \gamma = 2\pi \gamma + \beta(r) \tag{10}$$

Type  $g_{11} k_{2} h_{2}$  or latter  $k_{11} = 2 \log k$ 

$$= \frac{\frac{\partial x}{\partial y}}{\frac{\partial y}{\partial y}} = \frac{\partial y}{\partial x}$$

$$= \frac{\partial x}{\partial y} = \frac{\partial x}{\partial x} + \frac{\partial y}{\partial x}$$

$$\begin{aligned} \Rightarrow & || \operatorname{Col} f|| \frac{\partial f}{\partial x} | = \partial f f \\ & \frac{\partial f}{\partial x} | = \operatorname{Col} f \cdot \operatorname{Col} f \end{aligned}$$

Dy nubarating,

$$P(x) = S(x) - S(x^2 + x)$$

(iii: roduupe ii eri iixanä

-5 (d

show a winder at at the inflation was small b and the section will be set and the section b

$$\frac{1}{z} = \frac{1}{a + c}$$

$$\frac{s + bc}{c^2 + b^2} = \frac{1}{s^2 + b^2} = \frac{a}{s^2 + b^2} = \frac{b}{a^2 + b^2} =$$

 $5165 \times 500$  g

$$\frac{a}{\sqrt{a^2}} \frac{a}{a^2} > 0$$

$$\frac{-a}{a^2} + a^2 = 0$$

 $S_{t} = \frac{1}{2} i \epsilon_{t} \ln dV \operatorname{quodram}$ 

$$\frac{1}{a} = \sqrt{\frac{1}{a^2 + 0^2}} \int_{-1}^{2} \frac{1}{a^2 + 0^2} \int_{0}^{2} \frac{1}{a^2 + 0^2} dt$$

$$= \frac{1}{4a^2 + 0^2} \int_{0}^{2} \frac{1}{a^2 + 0^2} dt$$

Sirce to a factor .

$$\frac{1}{\sqrt{3}}\frac{1}{12}$$
,  $9.1$ 

 $\Re \left(\frac{1}{2}\right) \approx \text{defisite the finite wide fix its expectant}$ 

18 (a)

$$I = \oint_{\mathbb{R}^n} \frac{-2(\pi_+)^2}{(2\pi_+)^2\pi_+} d\sigma$$

. = 2.6 (5.4); higg/dage(

$$Poles \approx \frac{-3(2+3)}{12^2 + \frac{3}{2(2+3)}} \operatorname{starty} \operatorname{var}_{B_1} \operatorname{by}$$

**きょ4フょう** こり

$$Z = \frac{-1 + \sqrt{8} \frac{2}{2} - 20}{2} = \frac{41.9}{2}$$
$$= 2.13$$

Since the specific quality we are by |x| = 1. So |x| is analysis that the probability |x| = 1.

for the 
$$\oint_{\Omega} \eta_{ij}(dx) = 2\pi i (0) \pm 0$$

17. Car.

a mailheath as Wilgowd pages.

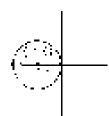
$$|z| = \exp \frac{c}{2} + \exp \frac{z}{2} = s^{\frac{2}{3}}$$

$$\label{eq:section} \Delta^{p} = z_{\parallel} + \left( e^{z_{\parallel} z_{\parallel}^{p}} \right)^{p} + e^{z_{\parallel} z_{\parallel}^{p}} = e^{-p/2}$$

IB. 7c

Given, 
$$\mathbf{q}(t) = \frac{1}{|z|} \cdot \frac{2}{|z+3|} = \frac{(z+3) - \delta(z+3)}{(z+3)(z+3)}$$
  
=  $\frac{z}{(z+3)(z+3)}$ 

About art at the (1+3,1+3,0) and (12,0). From figure below of (1+3)



where  $I(eI_{\rm c})$  ,  $\phi_0$  is the deliber of Heisenberg  $g_0\phi_0$  . So, where  $I(e,\phi_0,\phi_0)$ 

Hadatta francia sever

 $\frac{1}{(2\pi)^2}C(0x) dx = - \cos \alpha \cos \beta (1) \cos \alpha \cos \theta \cos \alpha (1) \cos \alpha \cos \theta$  which are

So being the integral  $\frac{1}{2\eta} \int_{\Omega} dz dz$  is plantly

Le rociduo or function  $a, p \in \mathbb{N} (\{a\}_{a\in \mathbb{N}}^n) \setminus \{a\}_{a\in \mathbb{N}}^n \cap \mathbb{N}$  is the discourage.

The residue to 
$$=\frac{-(-9+7)}{(-7+3)} - \frac{2}{2} - 1$$

10. [5)

$$\begin{aligned} & \cdot (-\cos\left(\frac{s_0}{s}\right) \cdot \sin\left(\frac{s_0}{s_0}\right) \\ & - \cos\left(\frac{s_0}{s}\right) \cdot \sin\left(\frac{3n}{2}\right) \\ & + \cos\left(\frac{\pi}{s}\right) \cdot \sin\left(\frac{3n}{2}\right) \\ & + \cos\left(\frac{\pi}{s}\right) \cdot \sin\left(\frac{\pi}{s}\right) \end{aligned}$$

$$& + \cos\left(\frac{\pi}{s}\right) - \sin\left(\frac{\pi}{s}\right) \\ & + \cos\left(\frac{s_0}{s}\right) - \sin\left(\frac{3\pi}{s}\right) \end{aligned}$$

20. (4)

$$g_{\rm eff} = \frac{2^{2}}{c^{3}} \left[ \frac{e^{-c}}{c^{3}} \right]^{2}$$

Like side 
$$y \in \mathbb{N}$$
 of  $A \in \mathbb{N} = 0$   

$$y = -\frac{y \cdot a \cdot b^{-1}}{y^{-1}} = \frac{3(2a)^{-1}}{y} = \frac{3(2a)^{-1}}{y} = \frac{1}{y}$$

$$y = -\frac{1}{y} = \frac{(2a)^{-1}}{y} = \frac{1}{y} =$$

21. (a)

$$\frac{x^2 - 4}{x^2 - 4} = \frac{x^2 - 4}{12 - 200(x - 20)}$$

Pages at P(x) = P(1, 2, 10, 3) and Q(-2) $\operatorname{rom}_{\Gamma} \operatorname{guile} \operatorname{gl}(-\Gamma + 1) = 0$  we wanthwhen and use rade (),

Williamson i 2. Brown de Si

$$+ \int \frac{z^2 - 4}{z^2 + 4} dz = 2 \sin z \operatorname{Hot}_1(z)$$

$$= \lim_{z \to 0} \left. \frac{(z - 2z) \left( z^2 - 4z \right)}{(z + 2z) \left( z - 2z \right)} \right|_{z \in \mathbb{R}}$$

$$= \lim_{z \to 0} \frac{(2z)^2 - 4}{(2z - 2z)} = -2 \pi z$$

22. (b)

$$\begin{aligned} \frac{(2-3)!}{(-1-3)!} &= \frac{(2-3)!}{(-3-3)!} \times \frac{(-3-3)!}{(-3-3)!} \\ &= \frac{-(2-2)(-13-3)!}{(29-3)!} = -\frac{13+164}{29} \\ &= 4(-5)(-15)! \end{aligned}$$

23. (5)

дь рэ. Скизту-Візіпапе саца, эті

$$\frac{\partial u}{\partial x} = \frac{\partial v}{\partial y}$$

$$a_1 m = -\frac{2\pi}{2k} = -\frac{k x}{2k}$$

$$\frac{\partial \Omega}{\partial x} = 2y$$

$$anc = -\frac{ad}{4\pi} = 2\pi$$

$$\frac{\partial v}{\partial v} = 2v$$

$$y = y^2 - 4y^2$$

$$\frac{2\pi}{2} = 1 = 2(v) = -2\pi$$

... 
$$(x_1)^2 = e^{\frac{1}{2}} + \text{constant}$$
  
 $(x_1)^2 = e^{\frac{1}{2}} + (x_2)^2 + (x_3)^2$ 

24. (6)

As not Cauchy Remain eq. 80005

$$\frac{\partial u}{\partial x} = \frac{\partial v}{\partial y} \quad \text{and} \quad \frac{\partial u}{\partial y} = \frac{\partial v}{\partial x}$$

$$u = v - y^2$$

$$\frac{\partial x^i}{\partial x} = (2x - \frac{\partial x^i}{\partial x^i} + -2)x^i$$

$$\dots = \frac{2^{d}}{2^{d}} = 2^{d}$$

$$\Rightarrow \qquad \gamma = 2\varepsilon_f + 3\varepsilon_f$$

$$-\frac{32}{32} = 22 - 704$$

$$= -\frac{\partial \mathcal{L}}{\partial x} = 2x + f(z)$$

$$\begin{array}{ll} \omega_{p} & = -2(y) - f - 1.5 \text{ find a D} \\ + & = -2xy + D \end{array}$$

25. 
$$(c)$$

$$z = \frac{(1 + i)(1 + i)}{(1 + i)(1 + i)} = \frac{(1 + i)^2 + 2i}{(1 + i)^2}$$
$$= \frac{2i}{2} = i$$

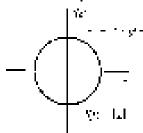
$$2 = x + \partial y = 1$$

$$6 \partial y = 0$$

$$y = 0$$

$$y = 0$$

$$\begin{split} \Delta \varphi(\mathbf{z}) &= |\nabla \mathbf{z}|^{-\frac{2}{3}} \frac{\gamma}{2} \Big[ -|\mathbf{z}| \mathbf{z}|^{\frac{2}{3}} \Big] + |\mathbf{z}|^{\frac{2}{3}} \\ &+ \frac{\pi}{2} \end{split}$$



$$\begin{aligned} Z &= z - y \\ ZZ' &= [x, 1, y][z - (y] + y^2 + y \end{aligned}$$

 $ZZ' = (x+x)(z+y) + \pi' + y'$  which is equal to find a wave to give t

$$\frac{14}{27^2} = 2^3 = 2^3$$

$$e_1 = \frac{1}{2} = \frac{1}{2} = \frac{1}{2} = \frac{1}{2}$$

Z = -270160 is dually real and non-negative.

$$\begin{aligned} Z &= i(1) \partial y \\ S &\approx \varphi - \varphi_2 \\ Q &= e^{i\phi} \otimes \operatorname{solv}_1 \end{aligned}$$

$$\frac{\partial u}{\partial x} = -e^{-\frac{1}{2}} \sin(x)$$

firm array) ca nunction

$$\frac{\partial h}{\partial t} = \frac{\partial V}{\partial y}$$

$$--\frac{\partial v}{\partial x^2} = -x \wedge \delta \, \Gamma(x)$$

elegialing taru y

33. (e)

$$J(z) = \left[\frac{-z^2}{1+z^2} + \int f(z) dz\right]$$

⊈iven einex.

$$12 + 1 = 1$$

$$\gamma \circ |(x + y) \circ A| = 1$$

$$(a + 1)^{n} + y^{n} = 1$$

$$f = 1 - 2$$

$$= - \frac{1}{2^{n}} \operatorname{det} \left( \frac{1}{2^{n}} \right)^{2n} \operatorname{det} \left( \frac{1}{2^{$$

$$\left|\frac{z^2}{(z-1)(z+1)} - 2\pi i \left|\frac{z^2}{z}\right|\right|_{z=-1} + 2\pi i \left|\frac{z^2}{z}\right|_{z=-1}$$

of the out = 
$$-1$$
) =  $\int \frac{z^2}{(z-6)(z-6)} = Q$ 

ac files o Par Hifmin I signifer

21. (a)

The Tay on sispines open halos for

$$2in(s) = c + \frac{s^3}{3!} + \frac{s^3}{3!} + \frac{s^4}{2!} + \cdots + 2in(s) + \frac{s}{2!}$$

and space = 
$$1 - \frac{k^2}{2!} + \frac{k^2}{2!} + \frac{k^0}{8!} + \dots + \infty \in \mathbb{R}_{>0}$$

$$2.381 \ a = 0.5 \cdot x = 14.35 \cdot \frac{20^3 - 80^2}{2!} \cdot \frac{20^3 - 30^3}{2!} \cdot x$$
$$= 2 + 8x + x^2 + \frac{3^3}{2} \cdot 4 \cdot x$$

Set 
$$S^{*}() = \sum_{i=0}^{n-1} \frac{1}{n!}$$
  
 $= \frac{1}{60} + \frac{1}{1} + \frac{1}{2!} + \frac{1}{6} + \frac{1}{6!} + \frac{$ 

ggg wyk switte syn basicnot d

$$d^2 = 1 + a + \frac{1}{2} a^2 + \frac{1}{3} a^3 + \frac{1}{24} a^4 + \cdots$$

Ptd 
$$x = 1 \text{ at above extractors}$$

$$x' = 1 \text{ if } 1 + \frac{1}{2} + \frac{1}{2} + \frac{1}{24} + \cdots$$

$$x' = \frac{2}{2} \frac{1}{24} + \frac{1}{24} + \cdots$$

$$\begin{aligned} z_1 &= 0, \quad \left( \cos^2 \left( \frac{1}{2} \cos^2 \left( \frac{2}{2} \cos^$$

35 (d)

$$\begin{array}{lll} \nabla x_1 & \nabla = \pi & \partial y \\ & \partial = x & \partial x = \pi y \\ & \partial_x = 1 & \partial_x = 0 \\ & \partial_y = 0 & \partial_y = 1 \\ & \partial_x \neq y \text{ the } D & \text{Mind satisfies.} \end{array}$$

🗻 🔮 sing a wikite tunction

$$\begin{aligned} & \mathbb{E}_{\mathbf{q}_{1}} \left[ -\frac{\partial \mathbf{q}_{1} \cdot \boldsymbol{\partial}}{\partial \mathbf{q}_{1} \cdot \boldsymbol{\partial}} \right] \\ & \hat{\mathbf{q}}_{\mathbf{q}_{2}} \right] = \frac{\partial \mathbf{z}_{1} \cdot \boldsymbol{\partial}}{\partial \mathbf{z}_{1} \cdot \boldsymbol{z}_{2}} \end{aligned}$$

$$\frac{dP_1}{dP_1} = \frac{dP_2}{dP_2} + \frac{dP_3}{dP_3} + \frac{dP_4}{dP_3}$$

 $\begin{array}{lll} \omega_{1} \ldots \omega_{p} + \delta c z_{p} + c s z_{p} + c s z_{p} + \delta c^{2} \\ - \delta c (1_{p} - z_{p}) = c c_{p} z_{p} + Z_{p}^{2} \\ - z_{p} z_{p}^{2} = z_{p}^{2} \\ - z_{p}^{2} z_{p}^{2} = \delta z_{p}^{2} - 2 a z_{p}^{2} \end{array}$ 

$$3 = \frac{37}{2} \cdot \frac{49\%}{2} = 16$$

87. (3)

 $q_{a, b, b, b} = \frac{1}{2} \frac{1}{2} q_{a, b}$  where b is the undependently

Dwinnys maleur Inscien

$$\oint \int_{\mathbb{R}^{2}} dz = 2\pi i \left[ (0, t) \left( d \right) + i \left( t \right) d \right]$$

$$\sim \frac{1}{r^2} \times 607$$
 or a yellowled z = 0

Salza Signerose di oda 2

Set, respectively 
$$z = 0 - \frac{1}{(2 + \gamma)^2} \int_0^{2\pi} \frac{d^2 z^2}{(2\pi)^2} \frac{1}{z^2} \left[ \frac{1}{z^2} \right]_{z=1}^{\infty}$$
. (1)

$$\theta := \sqrt{\frac{1}{12}} \cos^2 \theta = 2\pi i |0\rangle = 0$$

39. Sol.

$$B_{m,n} = \frac{z + z}{z}$$

Since there is no code in side with all did, so. Recoduciation like is that

$$\rightarrow \frac{1}{2\pi i} \oint \operatorname{He}(z) dz = 0$$

59 |h;

ReCouche attend from the

$$\hat{n} = \frac{r(z)}{(z - z_0)^{\alpha}} : \Delta z = \frac{r_0 - r_0^{\alpha}(z_0)}{r_0^{\alpha}}$$

$$\oint_{\mathbb{R}} \frac{d}{(z-z_n)^2} = -\frac{2\pi}{n!} \cdot n = 0$$

43. **(a)** 

$$f(z)^{+}$$
 as the  $f(z)^{-}$   $f(z)^{+}$  as the  $f(z)^{-}$ 

$$= \lim_{z \to 0^+} -10.7(z) = \lim_{z \to -(z+2)^2} \frac{1}{z}$$

ੱਸਿਆਂ ਸਭਾਵੀਂ ਹੋਈ  $a_{1}(z=-2)$ 

$$= \frac{1}{2\pi^2} \left[ \frac{g}{2x^2} + (x - 2)^2 f(x) \right]$$

$$= \frac{1}{4\pi^2} \left[ \frac{f(x - 1)^2}{6x^2 + x - 1} \right]$$

$$= \frac{-g}{4\pi^2} \left[ \frac{-g}{-g^2} + x - 1 \right]$$

11. (a)

$$\lambda(z) = -((1-z) + (1-z))^{-1}$$
$$= \frac{1}{2 \cdot (1-z)} = \frac{1}{1 \cdot (1-z)} = \frac{1}{2}$$

42. So.

$$f(z) = 2z^2 - |c| \cdot |z|^2$$

Green Inth (2) Keenery, g.,

with the presidently owner on the

191000 il <sup>3</sup> 15 Shirt— liau e al trolong e hitrori Problem

2<sup>-7</sup> alcoay ben<del>g yahuru</del>

$$\frac{1}{2} (2A + 2A^2 + 5A^2)$$
 scharges

43 (a)

$$\begin{aligned} \mathbf{u} &= 2 \epsilon p \\ \mathbf{u}_{\alpha} &= 2 p \\ \mathbf{u}_{\beta} &= 2 p \\ \mathbf{v}_{\alpha} &= -2 p \\ \mathbf{v}_{\beta} &= -2 p \\ \mathbf{v}_{\beta} &= -2 p \end{aligned}$$

(= " =qualization and solid tends only in option in

44. Gal

Over 
$$1 \text{ str}(x) + x + y$$
 (it smooth)  
 $2x + y' + 2x + y$   $y = x^2 + y^2$   
 $2x + x^2y + y = x^2y$   
 $2y + y = x$   
 $3x + 1$   
 $4y + 30x + y = 2x$   
 $4y + 2x = 2x$ 

45. (b)

$$\begin{aligned} f(z) &= z - z \\ f(z) &= 0 \text{ continuous (pallynymen)} \\ &= 0 \text{ continuous (pallynymen)} \end{aligned}$$

ि ने न्यायशाला nataalki⊟ ।

s No where analy in

46. (a)

$$\int_{\mathbb{R}} \frac{\sin x}{2^{n} - 2^{n} - 2^{n}} dx$$

$$i = \int_{\mathbb{R}} \frac{\sin x}{x^{n} - 2^{n} - 2^{n}} dx$$

$$= 0 = \text{in against partial } x^{n}$$

$$= \frac{12}{\pi} \frac{\ln \sin x^{n}}{x^{2} - 2x - 2^{n}} dx$$

Pelso are ∯in Sz + S + C

$$= \frac{-2 \pm d^2 - 2}{2} = \frac{(2 + 1)^n}{2} = \frac{-1 + 2}{2}$$

. Outside in agent  $p_{\rm eff}$ 

т в до цусситал

$$=\frac{e^{2}}{1+4+6} - (1+4) \frac{e^{2}}{(2+4+6)(2+4)(3+4)} + (2+4+6)(2+4)(3)$$

$$=\frac{e^{2(2+3)}}{(-1+4)} = \frac{e^{-2}}{1+4} - \frac{e^{-2}}{1+4} - \frac{e^{-2}}{2a}$$

$$2 = i P \text{ or } 2\pi i \frac{e^{2\pi i + 2}}{2a} - 2\pi i (\pi e^{2\pi i + 2\pi i})$$

$$= i P i (\pi e^{-1}(aa) - (e^{2\pi i + 2\pi i}) - \frac{\pi e(a)}{2a}$$

**4**7. (c)

Since 
$$\log z = \frac{1}{2} \cdot 2 \pm 7$$
 only 
$$z = \frac{1}{2} \log n \log n^2$$

Living to the content of the content

$$\frac{d}{dt} = -2\pi i (3) - \frac{2\pi i t}{3}$$

$$\begin{aligned} & \text{Bostdup} := \frac{1}{2} = |\vec{a}|_{\mathcal{S}} \\ &= \lim_{z \to \infty} \left( z \cdot \frac{1}{2} \right) \cdot \frac{3z + 5}{\left(z - \frac{1}{2}\right) \left(z + 2z + 5\right)} = \frac{2z}{10} \end{aligned}$$

48. Sci.

$$\sum_{0 \leq t \leq \frac{1}{t}} \frac{z^2}{t-t_0} u_{t_0} = \frac{z^2-1}{2\tau_0} \int_{\{t_0-t_0\}+\tau\}} dz$$

Poiss are all t = 1 - 1

Grenordais = 1| 1:

Bes  $V_{2}$  of T = 1/5.

$$= \lim_{z \to 1} (1 + i) \frac{z^2}{(z + i)(1 + i)} + \frac{2}{2} = 1$$

 $-\cos(i\Omega)$  at  $z=-i\beta_0=0$ 

 $p_{\mathcal{N}}(\mathcal{A}_{\mathcal{A}})$  the formula of  $\mathcal{A}_{\mathcal{A}}$ 

$$\sum_{i=1}^{n} \int_{0}^{2^{2}} \frac{1}{2^{i} - 1} dz = \frac{1}{2\pi_{i}} \times 2\pi_{i}^{2^{2}} - C_{i} =$$

∡a Sol.

$$I = \frac{\frac{1}{2\pi i} \frac{807}{(\pi - 8\pi i)^2} dz}{\frac{2\pi i}{3\pi i} \frac{2\pi i}{9} \frac{2\pi i}{9} \frac{2\pi i}{9}$$

$$NT_1 = 2 \ln x$$

$$f'(z) = z \cos z$$

$$P(D) = RD$$

$$|T| = -\frac{1}{2\pi} \times \sqrt[3\pi]{\frac{\sin^2(2\pi)}{2}}$$

$$=-\frac{1}{5}\cos^3(2\pi + 199)57$$

50 (b)

so the 
$$dz' = \lim_{z \to z} (z - z) = \frac{dz'}{z}$$
  
=  $z^2 = 2.30$ 

$$\frac{1}{2\pi i} \int_{-Z_{1}}^{-R_{1}} g Z = 2\pi i \cdot \frac{1}{2\pi i} (7.09) = 7.09$$

$$f_0 = \frac{T_0}{r_0} = 2$$
 (as a noide Other). Bas  $\Delta T = 0$ 

$$\inf \left[ \frac{z^{2}}{z+2} C^{2} \right] = \left[ \lambda_{1} \cdot \sum_{i=0}^{n} (C) + C^{2} \right]$$

£1. Sol.

Then 
$$h = al \left( \frac{8\pi z}{z^2} \right) = \text{Cool invent} \cdots \left( \frac{1}{z} \right) in$$

$$\frac{z}{z} = \frac{z^4}{3l} + \frac{z^4}{5!} = -1.$$

$$\text{ in Divertises most} = \ln \frac{1}{2} \left( \frac{\lambda}{|\lambda|} + \frac{\lambda^2}{|\lambda|} + \frac{\lambda^2}{|\lambda|} + \frac{\lambda^2}{|\lambda|} \right)$$

52 (b)

$$\frac{1}{2}(3z+5) = \frac{3}{2}(3z+4) + \frac{3}{2}(3z+4$$

$$\int \frac{2(z-b)}{(z-b)(z-a)} dx = 2\pi i (a)$$

Rinnal ladanas musibblety al J. 2

$$-cs_1(z) = -cs_1(z - i) \frac{(z - i)}{1 + i} \frac{(z - i)}{1 + i} = \frac{-2}{2} - 2$$

$$\frac{1(\sec^2(1)) = -\frac{6}{1+2}(2-2)}{2-3} \frac{(2-5)}{2-2(2-2)} = \frac{6-5}{2} = 1$$

horotore L= Triple Lie- 1800 C

ing in ny wordt gerffe green niegral values is eoua in au

53. (t)

Gwen Isi in lanting unclun

$$\begin{aligned} f(t) &= (2^{2} - 2y^{2}) - 1 \text{ for } \\ f(t) &f(t) &= (1^{2} - 2y^{2}) + 2 \text{ for } y^{2} \\ f(t) &f(t) &= (1^{2} - 2y^{2}) \\ f(t) &f(t) &= (1^{2} - 2y^{2}) \\ f(t) &= (2^{2} - 2y^{2}) + (2^{2} - 2y^{2}) + (2^{2} - 2y^{2}) \\ f(t) &= (2^{2} - 2y^{2}) + (2^{2} - 2y^{2}) + (2^{2} - 2y^{2}) \\ f(t) &= (2^{2} - 2y^{2}) + $

\$4 (b)

55 (c)  
Free 
$$z = 2 \cos \sin 4 c |z| = 3$$
  
Pex  $\sqrt{2} = \frac{\sin (c - 2)}{2} \frac{z^2 + 2z + 3}{z - 2}$   
 $z = 2$ ,  $z = 3 + 4 + 3 = 7$   
For Causi is residue theorem  
 $1 + 2\sin 7 + c \cos 2$ 

56. (d)  

$$\underbrace{\lim_{z \to -2\pi + i(z^2 + 2)} \frac{2^2 - 1}{2^2 - 2\pi - i(z^2 + 2)}}_{(z^2 + 2\pi + 2)} = \underbrace{\frac{2^2}{2^2 - 2\pi - i(z^2)}}_{(z^2 + 2\pi + 2)} = \underbrace{\frac{2^2}{2^2 - 2\pi - 2}}_{(z^2 + 2\pi + 2)} = \underbrace{\frac{2^2}{2^2 - 2\pi - 4}}_{(z^2 + 2\pi + 2)}$$

57 (b)  
= 3 in the orientation of as 
$$x = x$$
  

$$\int_{0}^{1} \left[ (x^{2} + y^{2}) dx \right]$$

$$= \int_{0}^{1} (x^{2} + y^{2}) dx + 2 dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y^{2}) (dx + y) dy$$

$$= \int_{0}^{1} (x^{2} + y) dx$$

58. (b)
Figs and of 
$$z = 4$$
 is
$$\frac{1}{24} \left[ z - 4 \right] \frac{1}{(z + 2)(1 + 1)^2} = \frac{1}{(4 - 1)^3} = \frac{1}{125}$$
Hariana of  $z = -1$  is
$$= \frac{1}{2} \left[ \frac{A}{2} \left[ (z + 1)^3 \frac{1}{(z + 2)(1 + 1)^2} \right] \right]$$

$$= \frac{1}{2} \left[ \frac{A}{2} \left[ \frac{2}{(z + 4)^2} \right] = \frac{1}{(1 + 4)^2} = \frac{1}{22}$$

$$\begin{aligned} &= \exists - \text{es insect } | \mathbf{z} | + \mathbf{s} \\ &= \exists (\mathbf{z} - i) |_{(z - i)}^{2z - 1} + \mathbf{s} \\ &= \exists (\mathbf{z} - i) |_{(z - i)}^{2z - 1} + \mathbf{s} \\ &= \exists (\mathbf{z} - i) |_{(z - i)}^{2z - 1} + \mathbf{s} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)}^{2z - 1} + \mathbf{s}}_{(z - i)}^{2z - 1} \\ &= \underbrace{\exists (\mathbf{z} + i) |_{(z - i)$$

ED. (a) 
$$\begin{aligned} \hat{v}' &= x + x^{2} \\ &= x^{2} - x^{2} + \frac{1}{2^{2} + y^{2}} \\ &= x^{2} - x^{2} + \frac{1}{2^{2} + y^{2}} + \frac{1}{2^{2} + y^{2}} \\ &= x^{2} + \frac{1}{2^{2} + y^{2}} \frac{1}{2^{2} + y^{2}} + \frac{1}{2^{2}} \\ &= x^{2} + \frac{1}{2^{2} + y^{2}} \frac{1}{2^{2}} + \frac{1}{2^{2}} \\ &= x^{2} + \frac{1}{2^{2} + y^{2}} \frac{1}{2^{2}} + \frac{1}{2^{2}} \\ &= x^{2} + \frac{1}{2^{2} + y^{2}} \frac{1}{2^{2}} + \frac{1}{2^{2}} \\ &= x^{2} + \frac{1}{2^{2} + y^{2}} \frac{1}{2^{2}} + \frac{1}{2^{2}} + \frac{1}{2^{2}} \\ &= x^{2} + \frac{1}{2^{2} + y^{2}} \frac{1}{2^{2}} + \frac{1}{2^{2}} + \frac{1}{2^{2}} + \frac{1}{2^{2}} \\ &= x^{2} + \frac{1}{2^{2} + y^{2}} \frac{1}{2^{2}} + \frac{1}$$

$$\begin{split} & \phi = -2\beta y - \frac{e}{(x^2 - y^2)} \mathcal{Q} \\ & \phi = -2\beta y + \frac{y}{(y^2 - y^2)} (2x) \\ & \phi_1 = -2\beta y + \frac{(x^2 - y^2) - y(2y)}{(y^2 - y^2)^2} \\ & = -2\alpha - \frac{y^2 - y^2}{(y^2 - y^2)^2} \\ & = -\frac{2\alpha}{2} \frac{y^2 - y^2}{(y^2 - y^2)^2} \\ & = -\frac{y^2}{2} \frac{y^2}{(y^2 - y^2)^2} \end{split}$$

61. (d)  
Headue at 
$$z = 3$$
 is
$$= \lim_{z \to 0} \frac{(z - z)}{(z - 0)} \frac{z}{(z - 0)(z - 0)}$$

$$= \frac{3^2}{(3 - 0)(3 - 0)} = \frac{27}{15}$$



# Probability and Statistics

## 5.1 Probability Fundamentals

### 5.1.1 Definitions

 $\textbf{Sample Space and Frent:} \ \, \textbf{Consider} \ \, \textbf{single properties of the proper$ exportant, g , a local exaction export the  $\Gamma$  -exposes, g , f outpoints g , on the g, the export tile  $\Gamma$  will be K a window gettende latte (uppose ) at the certailal practical of antics, sike to 1. This set it fall great to a termes in th Happer more in who we take a ample a pack of copyright and a general by C(S) and a and a was taken as

- $t_i$  . If the outcomes of an except i will consist in the determination of f i was of a newborn and f,  $\pm cc$  $\mathcal{S}=\{g,\,g\}$  where the autocare g inconstruction that the g is a gift one grid the box.
- g = J the cultistic of property straight with convex Q and single J as then  $S \in \Gamma(1, 0) \cap S$  for
- $g_{ij}$  . If the collection of the contraction of the G is a race, sourced by G where the G which  $\phi$  is factor  $1 \equiv 0, 0.5, 0.5$  to the constant A (i) performance is form  $(1 \geq 0, 4 \leq 0, 3 \leq 0)$  :

The  $\alpha$  to time (2, 2, 1, 5, 5, 4,  $\alpha$ ) means, for instances, that  $\alpha$  is starbed 2 hands containing,  $\alpha$  in  $\pm c$ number a horse character of 14 to marse, 2000 a

Any probability  $\mathcal{C}$  , we completely a temperature  $\mathbf{e}_{i}$  when  $\mathcal{C}_{i}$  and  $\mathcal{C}_{i}$  are contracted as  $\mathcal{C}_{i}$  are contracted as  $\mathcal{C}_{i}$  and  $\mathcal{C}_{i}$  are contracted as  $\mathcal{C}_{i}$  game on a relation possible contemps of the experiment. By sections, to the provention of the  $\xi = [-, 2, \xi] \in \mathbb{R}[R]$  and some note big Hirth  $W^{\mu}$ 

a the principal material vacua is unchanged in  $\delta$  , which we say the Linear element A and  $\phi$  is  $\delta$ 

Since TR Sign calls the completion through may accomplishly used to express the class  $a_{ij}$  and  $a_{ij}$ газартумири в а теге сения ізмес.

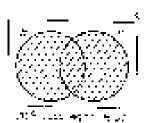
**Example:** A by tractions, and call the contrast A is a contrast B and B and B and B and B such a satisfied B

In this class example +3000 for =1200 for =1200 for a second constitution of the =2000 for =2000

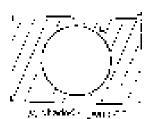
Simply  $A(E_i, E_j, d)$  (see Eq. Simple event to . .  $E_i(A)A \in \mathcal{A}(E_i)$  , these are described in Simple events. Compause seems may be seems many 1 environ bucking. A vit 12,5% inconcrete intribites —naw. iton. We say ware Shaut appeared thire to a conception of sicility

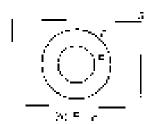
For any two events F and F or g -smaller such a supple velocities have short F in F to consider all ali epicomes il strate cillia i di sioni il Filat in Budi Pilateg El Tirta (s. 1) e cecni. Civi a selli i di d **either C** or , for LeM letteurs. For larburges, in the cross-source ( ) Theoretic z=0,2 letter z=[3,4], then z=1- 11 2, 3, 4.

 $T_{\rm B} P_{\rm B} S_{\rm B} P_{\rm  Figure (the payont  $\mathbb S$  Similarly can be given examine  $\mathbb R$  and  $\mathbb C$  and may him cooling the rest examin 라는 역 palled Intersection of Month in sugar alth of a footbarries that elements about Fland \*









## 5.1.2 Types of Events

## 5.1.2.1 Complementary Event

The event. Fig. and contains tendent y even continues to the inverse of the respect to the figure  $x\in \mathbb{R}^n$  and  $x\in \mathbb{R}^n$  the potential  $x\in \mathbb{R}^n$  of the first  $x\in \mathbb{R}^n$  and  $x\in \mathbb{$ 

## 5.1.2.2 Equally Hkdly Events

leader) is signed. Fere equally isely if

Банкагра

of = (4.5 χ)

መው ዕው፣ እስታ የውጤ የነገር እ

$$\alpha(F) = \alpha(A) = \alpha(A)$$

## 5.1.2.3 Autually Exclusive Events

Two states Field. Exprisingly contains a surface that  $g(x) \in \mathcal{F}$  is the state of a surface to the state of the surface of

## 5.1.3.4 Collectively Exhausting Events

Two counts a and Fine color only with privariable P . Sile logality Cand Pinch is all positive currented,  $g(2, \sqrt{2}, 2\rho) = p(2, -1)$ 

## 5.12.5 Independent Events

beat weight and the first introducing graphs

$$\mathcal{S}(\mathbb{P}_{i}^{n}(\mathbb{P})) = \mathcal{S}(\mathbb{P}_{i}(\mathbb{P}))$$

٠...

$$|D(T_{ij}, \xi)| = |D(T_i) \cup L(T_i) \setminus \{1 - D(\xi)\}$$

Wilencomes in the measure identity what too over the and a new dependent the concretation operation to the concretation of the

#### 5.T.3 DeMorgan's Law

$$1. = \frac{\sqrt{F}}{\sqrt{F}} \frac{W}{1 - \sin^2 \theta}$$

$$|2|\left(\sqrt{r_0}\right)^2 + \sqrt{r^2}$$

$$\begin{split} & (E_1 \otimes E_2)^{G_1} = G_1^{G_2} \cap \underbrace{G_2^{G_2}}_{G_2}^{G_2} \\ & (E_2 \otimes E_2)^{G_2} = G_2^{G_2} \otimes \underbrace{G_2^{G_2}}_{G_2}^{G_2} \end{split}$$

Note that  $u_i^{\rm th} \sim S_i^{\rm eff}$  is not even the state  $F_i^{\rm th}$  and  $u_i$ 

 $_{\rm L} \sim r_{\rm g} \approx 0.5$  were either  $_{\rm H}$  or  $F_{\rm g}$  for both)

Example 14 to settern settering the probability of helicis F . For Eq.

$$\|\mu\|_{L^{2}(\mathbb{R}^{N})} \leq C_{2}^{N} \|\mu\|_{L^{2}(\mathbb{R}^{N})} + C_{2}^{N} \|\mu\|_$$

## 5.1.4 Approximate Probability

There, the Laplace contribute of an improving a fixed by  $C(\omega)$  . Even that

## 1. Chesteri Approach:

1.16 MOVEU

$$|\alpha_{i}\gamma_{i}| + \frac{\partial(\beta_{i})}{\partial \beta_{i}} \cdot \frac{\partial}{|\beta_{i}|}$$

To, the table to turned of ways an event can bugge the hearth and Total ways 44 to a cope of sample peed. Is the procedure, of the event. One viction opinion is assumed that all outrieness are exists in right.

#### Example 1.

 $(1)_{i=1} (possible) \ material, \ e + are \ plPDS, \ to suppose where proved it will also also satisfies that, i.e. are proved in the province of the provi$ who we part with a  $|\mathbf{U}'|$ 

#### Salution!

$$\begin{aligned} & \mathcal{D}(\mathbf{D}) = \frac{e(\underline{\mathbf{D}})}{e(B)} \\ & = e(B) + e(B) \text{ turngles at $0000 = 0$} \\ & = e(B) = [J: \text{ at }] \text{ at $D \in \mathbb{R} \times \mathbb{R} \times \mathbb{R} \times \mathbb{R}$} = 2^n \\ & = e(B) = \frac{e(B)}{e(B)} = \frac{B}{E} = \frac{e}{B}. \end{aligned}$$

20

#### Example 2.

From the left semi-lateral inflation properties to be in the upper form S example

$$\frac{\operatorname{Grade} = 1}{\operatorname{Floridate}} \stackrel{1}{>} \mathcal{L} \left[ \begin{array}{c|c} \mathcal{F} & \mathcal{L} & \mathcal{L} \\ 20 & \mathcal{C} & \mathcal{L} \end{array} \right]$$

Splution:

$$p^{\alpha} = 1000 \text{ for } (1.8) \text{ GeV} = 4.00$$

Dell'antigacy series 660 a

$$\exp(6\pi i \cos \theta) = \frac{r(x)}{2} \frac{2\pi i e^{-x}}{2} = \frac{10}{120} = 0.1$$

## 5.1.5 Axioms of Probability

ള്പ്പ് ജിന്നു സ്വക്ഷ് കൗർയാളുട്ടം - ജനാ വ്യാത്രക്ക് പ്രവേശം . ഗ്രാസ് മ്യാന് നാന്വ്യാക്കാരുട്ടാര് നട്ട് ദ്വേസ്ഥം ക് and, if  $g\in \mathcal{H}(0)$  is defined and so, shealth relawing three exists to

Asiom 4:  $0 \le C F(\Delta)^2$ 

&alom-7: "(*X*) = 1.

**Addom-S**ale for the keep langer of multiplie explicated  $\phi_{ij} = 0$  . In that is, lower is the wingle  $E_{ij} \cap \underline{A} = \{i = 0, i, j \in I\}$ 

 $\mathcal{L}_{\mathbf{s}}(\mathbf{k},\mathbf{f})$  for the converse matrix  $\mathbf{p}(\mathbf{r})$  . Let

$$|h(D_{\Sigma})| \leq \sum_{i \in E} h(e_i)$$

 $\textbf{Extraple}(f(\mathbf{x},\omega)P_k) = f(\mathbf{x},\mathbf{t}) + P_k F_k \text{ where } (F \cap F) \text{ with } \mathbf{t} \in \mathrm{sign}(\mathbf{x})$ 

## 5.1.6 Rules of Probability

The parabolar lead to be writing using military related by a real stall put to each three leading and there exert is ирлані са Церограцуу,

#### Rule 1:

$$S^{(A)} \cap B^{(A)} = C^{(A)} \cap p(B) \cap B(A \cap B)$$

That is is a so called the metallic continuous product of probability.

Lestomica de la costo

$$P(Z, Z, \sigma) = p(z) - g(\overline{z}).$$

Létand Seletinin algebraicher einse  $\beta(A)$  of -9 matrix is value.

#### Route J:

$$f(A) \cap \mathcal{Q}_{i} := f(A) \circ g(A) \circ g(A) \circ f(A) \circ g(A)$$

where  $p(\mathbf{a}_i^{(n)})$  represents the contributed probability of A () were alone  $\phi(\mathbf{a}_i^{(n)})$  the contribute conditions probability of  $\geq \eta \circ a_0 \circ c_0$ 

- wer \$196 not; (b) and all or (no many not probabilities in warror Brescoping of I had the Respondence Provided Cook in a piprorability.
- (b) (a.4)  $(\mathcal{P})$  scalar) the still probability of A at  $\mathcal{C}(\Sigma)$
- $(0.11) P = 300 B h \times 1$  depends of events, the formula and respectively.

$$\mathcal{Z}(A) = \frac{\partial A}{\partial A} = \mathcal{D}(A) + \mathcal{D}(B).$$

green and Figure 19 and and Haller

$$(2/\sqrt{2})=\pm (4)$$

医单加热剂

$$-i\langle 0\rangle$$

compared to the parameters of the  $\mu_{0}$  , a fixed  $\mu_{0}$  and  $\mu_{0}$  and  $\mu_{0}$ 

- (ii) in the substantial suggestion of the substantial substantial for the substantial sub
- Oracle chemical appropriation opportunity

Гимос А. Вали Спів інувренски і (і

$$\mathbb{S}(A^{\mathrm{B}}G) = (0.3)\,\mu(B)\,\mu(C)$$

**T**:

$$\partial \hat{x}(\omega) = \mu(A) \otimes \mu(B)$$

21 T

end.

$$\mathfrak{C}(A(G)) = \beta_0(A) \mathfrak{L}(G)$$

 $\mathbb{C}[\overline{A}] = \mathbb{Z}[\overline{A}] \times \mathbb{C}[A]$ 

Onto  $H \triangleq H \setminus \{x \in \mathcal{A} \mid x \in \mathcal{$ 

With a level of the expension of  $f(x) \in \mathbb{R}$ 

Rule 5: Countly Let 1919 Projection

$$\beta(\mathcal{N}) = \beta - \beta(A\beta).$$

 $sint(0.05) \approx 800.00038 \text{ psymerially crossoft } r_{\rm S} r_{\rm S} \text{ and } s.260 \text{ spreads} + 10000003 \text{ psymerial psymerical psychological  ret handa j

$$-10040 = -10020$$

#(Arthir second are to comp

(47) (27)

 $t_{\rm ch} \wedge g_{\rm ch}$  ) 41 means, also we have near all as cores in  $^{\rm st}_{\rm ch}$  advantable.

appropriate the particles where the  $40\,m$  Gr  $= (A^{-1}\,B)^2$ 

$$|g(x)| \leq g(x) + |g(x)| \cdot |g(x)| + |f(x)| \cdot |g(x)|$$

$$|g_{ij}\rangle = - |g_{ij}\rangle \approx \exp A \exp i \hat{g}_{ij} - 1$$
 when  $e^{-A \exp i \hat{g}_{ij}}$ 

Hule Acceptable on Michael Ly Burg

Summarior il e munglicada i dis

$$g(x \cdot \cdot | S) = g(y) \cdot i(x^y S)$$

by chest a hipforty he portious of an probability to must

$$p_{s}(G) = \frac{(Q \cap \underline{G})}{|S|(0)}$$

Pylimeral suggest Alany (id utilistoma L'arce (id)

$$p(\tilde{c}_{i}^{*,n}) = \frac{p_{i}\hat{a}^{*}e^{-i\theta_{i}}}{p(a_{i})}$$

Rule 5: Fulb of Fuel 7 edgring

Consider on over. Then this cours we that different events were to it units allowed to, when drawn in only was us considered by self-annualized events. This situation may be represented by to lowing the class  $\pi$ 

Now the the solution of this given by Leavis almost this solution as

$$f(\mathbf{S}) = f(\mathbf{S}) \cdot \mathbf{S}_{(\mathbf{S})} \cdot \mathbf{G}(\mathbf{S}) \cdot \mathbf{S}_{(\mathbf{S})} \cdot \mathbf{G}(\mathbf{S}) \cdot \mathbf{S}_{(\mathbf{S})} \cdot \mathbf{G}(\mathbf{S})$$

goist a left rule of that probability

Segregaries I messer we have easy yet any field, give a fait the entire Lines Productions and, whet is the r stanting the incoming John Willing Ay describe coming Resp. (new orth green) to de-

On expressions have strong the  $\mu$  in the strong state of the content of the property of the where the process of the Lie was goests out they do was the self-through the goest io ang Zero Brows a pari liki foto ya mator.

 $g_{\rm s}^{\rm op}$  , which is the compactified by the course of section that is Herdh

 $m_{\rm C} \sim 0.5$  m and the method row will be, which with fibrily the Higgs is mixed in

#### Salution:

fre  $y \leftarrow 350$ gg y(0) where 0gg  $\leftrightarrow 1.55$  0 while 0 is

$$\frac{1}{2} \sum_{n=0}^{\infty} \frac{2^{n}}{2^{n}} = 2^{n}$$

$$\frac{1}{(2)} = \frac{P(g_0 - \sqrt{-g_0})}{P(g_0 - \sqrt{-g_0})} + \frac{P(g_0 - \sqrt{-g_0})}{P(g_0 - \sqrt{-g_0})} + \frac{P(g_0 - \sqrt{-g_0})}{P(g_0 - \sqrt{-g_0})} = \frac{P(g_0 - \sqrt{-g_0})}{P(g_0 - \sqrt{-g$$

301

#### 5.7.1 Introduction

Gwaches is will report at minimental earlief each highest up the topic to son't will large counts the introduction. der visit was regruint as it signs about the lasts. To ally that, since on uses some the bere of meanings which costribly the general former compliant in the distribution of the upper classic x we can suffice x a x y yor and the principle  $\langle \phi_{2} \rangle$  above describing index (red.)

Teo description helescreption of a respection in a large army sergit those in a

- Vestula: Identis moderne.
- Moza na vilotoporska.

The destriction of the section x is the section x and y are the section y and y are the section y and y are the section ybin oursett from neser with a value 1 of describes the gains  $\pi$  being of the  $d_{\rm SM}$ 

The discussion measure the state was the extension p(y) contains the model between the central renders y water. In other words big considerings and quantities the warption at dots. The larger than one or one or the time ski a. ur among a tre gala ila ya.

Моал, Медригали Миненато волго начиравата си и и испостоу говежатось

is an early positive to the expectation of the property of the property of the transformation  $\kappa$ 

Now we will study each of diese six socialities, measures in greater about

### 5.7.2 A. Iffrmetic Means

## 5.2.2.1 Arithmetic Menn for Rum Data

The leads to versuoting these triness may ofer  $\phi$  and  $\phi$  ,  $\phi$  ,  $\pi = \frac{\Sigma \phi}{\pi}$ 

 $x \mapsto f \operatorname{class}(x) = \operatorname{explice}(x) \operatorname{constraint}(x)$ 

5 - Uniber of as separations.

#### Emmple

The number of existing above in a figure of the work at  $3.8 \pm 3.4 \pm 0.7$  s Ф56 теје (ну аустадет спростосе жт<sub>а</sub>.

#### 50 lutiure

 $\Sigma_{i} = 100$ , shall these numbers on yields, requirither with number of yields made whether it engineers

リール・ラッカック メッチ・メイフェインも7

Number of matrix n = 100

$$x_i = \frac{|\Sigma_i|}{\delta} + \frac{|\Omega_i|}{\epsilon_{ij}} \omega_{ij}$$

## 5.3.4.1 The Arithmetic Mean for Grouped Data (Prequency Cristolycillan)

 $^{
m T}$  is formula to the softman on various costed from a linearity, distribute these options at letter adults. Profession by Libertainer

$$\mathbf{v}_{i} = -\frac{\sum_{i=1}^{n} \mathbf{r}_{i,i}}{\sum_{i=1}^{n} \mathbf{r}_{i,i}}$$

#### Енитрін:

ió view nou vercen sa cuele », e a francia men laria graci e i licourroy. Est cur on tilent la di pago e en vogna d'75 plas i fra de-ara product, e traballo giventin la perio, leba

4 150 1 1	•	•	_	
(#/nlgnoy)ន្សាំ	Mindons of a			<u> </u>
	I		1 KLES <del>FT</del>	
SAurice: A	<u>!</u>		<u> </u>	
20 Survey 199		_   _	<u>-</u>	, <del>,</del> H
0us_ <u>c+H</u> r45	1 — <u>%</u>	l		ارين را <del>زن ا</del>
1 4 15 F 531 40	l		<u> </u>	) <sup>и</sup> Их
<u> - K. Ali</u> naan <u>91</u>	_ ::-	— ı	<u>:</u>	H
<u> 90 a co Ja ₹0</u>	. *	<u> </u>	<del>-</del> '	7.045
	l		: -	⊢ <sub>92.</sub> .
ad <u>Auro</u> criet.		<del></del>	- <u> </u>	ارشن
<del>20 5 _</del> moon 166 	- ' <u>*</u> -	<u> </u>	<del>:</del>	
130 3. ±15+ 140 Tu 3	·  <u> </u>		☴.	$1\frac{1}{\sqrt{30}}$
'.:·' -			· <del>-</del> —	

#### Solution:

with such designatory. If the lightweet even range of reuse or the validate empire it proof ignore As our visus for which expends to the or the light of the or the charge of the control of the set of the charge o

$$\label{eq:continuous} |x| = \frac{\sum_{i=1}^{n} c_{i}}{\sum_{i}} = \frac{L_{i}g_{i}}{10} = 64.4 \text{ kg}$$

#### 5.2.3 Median

A frametic makin is the demonstration of the principle of the sonability of the constraint of the principle of the sonable of

Anthoche de Alimatianie i combavel exemplay le tier officie se nombre qui procedure le la transfer extensión sociales for handle disclos grente las formación son estada a securidad estada disclos grente las formación son estada de la hombre de la social de la hombre de la hombr

### 5.13.1 Median for Baw Data

изропету, и намеро , матио обы, в едика берене цен in oscer ving a догов

$$\chi_{-}:=\chi_{1}^{-}\otimes\ldots\otimes\chi_{N}^{-}$$

Substantially by the first the region of the 
$$\frac{(r-b)}{2}$$
 - divides

Has proper til til  $x = y \in \mathbb{R}$  and have the middle of  $y \in \mathbb{N}$ 

$$d_{\rm P}(y) = \frac{\sqrt{y_{\rm p}^2 - y_{\rm p}^2}}{\sqrt{y_{\rm p}^2 - y_{\rm p}^2}} + \frac{\sqrt{y_{\rm p}^2 - y_{\rm p}^2}}{\sqrt{y_{\rm p}^2 - y_{\rm p}^2}} \approx 0.00$$

#### Expunde:

Horney in Control (\$4 -) sector id-\$4 on 190 197 198 no. 1199 188 What is a far neight

#### Salucion:

Arrai Çingirka hergina inviscending (J. 2011). U. 1871-198. 200, 101-1982.

Two middle is to waited a will a  $^{\rm SM}$  directly

$$g(g)(g(g) + \frac{1}{2}(160) + 1040) + 15605$$

## 53.1.7, Median for Grouped Data

dentity. He mode as a section consider the model is excessed of  $\begin{bmatrix} \frac{N+1}{2} & \frac{1}{2} \end{bmatrix}^N$  per rivery.) It is an  $t \in \mathbb{R}$  correspond to example of the passing with the cumulative frequency is equal to or more than  $\frac{N+1}{2}$ .

Here  $f_0 \in \Sigma_{\mathbb{C}^n}$  is althorough the Legengelle x

4. The rais Medicins jurgous.

$$\label{eq:Vorwind} \text{Vorwin} = \frac{1}{2} \frac{ \left[ \frac{2}{2} \frac{g_{1}}{g_{2}} \left( \theta - 1 \right) \right]_{2/2}}{\left[ \frac{2}{2} \frac{g_{2}}{g_{2}} \left( \theta - 1 \right) \right]_{2/2}}.$$

Malante.

u = 1 (we bound making  $p_{add}$ )

 $K^{\prime}=1270$  , the flet of smallering a SA

 $\mathcal{F}=\mathsf{Dunction}(\mathsf{A})$  is queries at the class trainer takety product by the most any taket

t. n. Bequenovior reglario assi

 $P = Matholined and <math>\mathbf{H}_{\mathbf{S},\mathbf{S}}$ 

#### Brample:

One specified the expatching long one make observed by Hubbrid in America

766.5acgara	no ultimate y s	Gurushanens) — oyl
0-27	<del></del> :	<u> </u>
201.40	÷	,
79 - CC	E)	· e
00 31	1.=	ا ين
	_ 25	<u>80</u>

#### Salugion:

Here, 
$$\frac{S_2}{2} = 2.5$$

. The class PC-PC is the model impoles a consultation frequency is  $90 \times 25 \times 10^{12}$ 

Motivar = 
$$\frac{900}{100} \left[ \frac{95.5 - (5.5)}{100} \right]_{-300} = 39.06 \pm 39.5$$

- v Mevian merke of the blaze is approximately a  $0.87^\circ$
- .6. (a) costras if the calcornic  $\phi_{0}$ , loss than (88.7 and rothwise) and tool respect an  $\phi_{0}$ .5 module

### 5.2.4 Mode

Mode is betaigned as have describe vertex dividence duration the query.

#### S.2.4.1 Mode for Ball Bate.

If the flats the most bequarity as a unity possession is the marker That is actionable approximates e.g. so upon the contract the contract the contract of the flat contract the contract of the flat contract the contract of the flat contract (support of the flat contract of the contract

#### fixample:

Fig. the two-High the day,  $x_{\rm H}$  (C2, 30, 70, 50, 50, 70, 31,

#### Sofution:

- Arrange in appointing to kin 50, 50, 50, 50, 80, 70, 70
- s in  $\nabla a \ll 2$  given in the actor if all perfect boths

$$\begin{bmatrix} \frac{\partial 2x}{\partial x} \left[ \frac{5}{41} \frac{x}{x} \right] 5y}{2} \right]$$

$$\begin{bmatrix} \frac{\partial}{\partial x} & \frac{1}{2} \\ \frac{\partial}{\partial x} & \frac{1}{2} \end{bmatrix}$$

(vaco is his leades) and are more in many models 50 the estimated as in fac-

## 5242 Mude for Grouped Data

Made is, a value of a which the requestry streaming in three values of property further, share jointh it suffices that the vertical values a frequency (for bully 10 er).

- los michis quest en on has tra largos, hely er sy (moda is 6.85)
- s Cabolae is Todows

Make 
$$a = \frac{\sqrt{2}}{2a_y + b_z + 1} \times \frac{b_z}{b_z}$$

If a complete of mode the set of the

#### Example:

. Description to the Leight of 252 is \$100 octobers and quart ( ) In his owing inequately bet following. Opiniosis the model of qua

( <mark>Pag</mark> ette 14	The state of the s	
<u> </u>	<u> </u>	
3.0 (1)	57	l
$x_{i,j} = q_{i,j}$	P <sup>2</sup>	
15 - = 0	152	
	116	
5.5 - 8.0	7	
75151		

#### Splutenn:

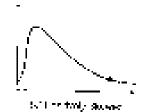
Since its 2% if a mass, here area, the table basis of S = S(U)

$$|h_{BB}|_{L^{2}}^{2}=\{|S_{1}|_{L^{2}}^{2}+|S_{2}|_{L^{2}}^{2}+|S_{2}|_{L^{2}}^{2}+|S_{2}|_{L^{2}}^{2}+|S_{2}|_{L^{2}}^{2}\}$$

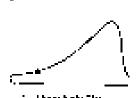
Hence = 
$$4.5 \times \frac{3.9 \times 49}{3(152) + 3(152)} \times (15 \times 17.5) (applys)$$

## 5.3.5 Properties Relating Mean, Median and Mode

- Smort or and all consists in Pinton
  when a reprovingly value of models, sourced also demonstrate relication, used may be used.
- 5 Indicate misolated of head once distributions Positively a depoly symmetric and height on discesses infringence







- (A) I F 63 kilosos sacedo gigli gijilopi
  - Notes & Portland Moon
- to the symmetric abridgation:

$$M(\sigma) = \sigma(e) \operatorname{id}_{\sigma} = \operatorname{Mode}_{\sigma}$$

- iot i fin egotive distance<br/>g distances
  - Year < Merda ⊴avaya

## 5.26 Standard Deviation

Standord Genetich statzter-did prictique -i zil privada i premiongal data

i succest viking attet de medalen i sim berantmann hevda vondey squate over der stor and de sjo I diantmen, medanon og stod og velke sill hit giber ud his brake del diagramen.

The passage active reproduct we are to be less to silandays Devintion's first graduatines.

## 52.6.1 Standard Contains for Say Duse

Such that  $\sigma_{\rm color}$  ,  $\sigma_{\rm color}$  and the substance in the first of the respection  $\times$ 

$$\lambda = \frac{1}{N} \mathbb{E}^{n_1 + n_1 \mathbb{I}_{n_1}} (\lambda_1 \cdot s_1 - \lambda_2 + h_2 \cdot h_2) + h_2 \cdot h_2$$

$$a^2+\frac{1}{a}E(0)/\overline{C}^2$$
 is the variable of all continuous power (Eq.

$$(\mathcal{Z} + \frac{\nabla (r_1 + \beta)^{k_1}}{2} + \frac{1}{2} \underline{\chi}_{\mathcal{L}_{2}}) = (1 + \frac{2}{2} \underline{\chi}_{\mathcal{L}_{2}})^{k_1} + \frac{2}{2} \underline{\chi}_{\mathcal{L}_{2}}^{k_2}$$

 $\theta$  is conveniental to convenie the value of the symbol  $\theta$  . The leads small eight and  $\theta$  is equivalent.

somethings of the value constraints and are divisible.

$$\alpha = + \sqrt{\frac{1}{2}\Sigma_{i,k}} = \epsilon \, t^{i} - \sqrt{\frac{1}{2}\epsilon_{i}^{2}} \nabla_{i,k} - \overline{\gamma}^{2} - \frac{1}{2} \sqrt{2} \alpha \frac{1}{2} \frac{1}{2} \frac{1}{2} \delta_{i}^{2} \right)^{2}$$

#### ⇔nmpda:

Usins on Thesist.combined as assumed to the energy examples  $90.30\,\mathrm{km}$   $30.30\,\mathrm{km}$  such a start and a environmental start decrease.

#### Salution:

<del>Uud</del> mi	w Marke	- - 1
	ΞŢ	j erzec
=	CII	.000
	?;	2000
·	. le∩ .	<u> </u>

Here, 
$$F = \frac{7}{2}$$

$$Can \text{ to Site naive } [x] = \frac{1}{\sqrt{\frac{1}{2} \pi}} \frac{\sqrt{\sum x_i} \left( \sum x_i \right)^2}{\sqrt{\frac{1}{2} \pi x_i}} = \frac{1}{\sqrt{\frac{1}{2} \pi x_i}} \frac{\sqrt{1}{2} \sqrt{1}}{\sqrt{2}}$$

$$Site X = \pi^2 + 33.67$$

## 5.2.6.2 Shandard Deviation boy Grouped Data

Captularly the standard development of ground fiducial constraints by this example:

#### Example

. The Nety Power disting it connecting a two Mac Pound collecting the burded risk is given, the key force for the work contact distribution of the second collection of the

#### Sulution:

$$\mathcal{D}(\omega) = \frac{\Sigma(z)}{\Sigma_0^2} = \frac{15770}{650} = 57502$$
 where 
$$\mathcal{D} = \mathcal{D}_0^2 = -52$$

 $H_{\rm Click}(n) = (\gamma_1 \otimes \gamma_2 \otimes \gamma_3 \otimes \beta_1) \times (\gamma_1 \otimes \beta_2) \times (\beta_1 \otimes \beta_2) \times$ 

$$= r_0 = \sqrt{\frac{2(\frac{1}{4})^2}{\frac{1}{4}}} - r^2$$

$$= \sqrt{\frac{2(\frac{1}{4})^2}{\frac{1}{4}}} \frac{7(\frac{1}{4})^2}{\frac{1}{4}} + \frac{1}{\sqrt{\frac{100}{100}}} \frac{66.275 - 100^{\frac{1}{2}}}{1000}$$

$$= \sqrt{\frac{2(\frac{1}{4})^2}{\frac{1}{4}}} \frac{2(\frac{1}{4})^2}{\frac{1}{4}} + \frac{1}{\sqrt{\frac{100}{100}}} \frac{66.275 - 100^{\frac{1}{2}}}{1000}$$

$$= \sqrt{\frac{2(\frac{1}{4})^2}{\frac{1}{4}}} - (2.000)^2 + 30^{\frac{1}{2}}}$$

$$= \sqrt{\frac{2(\frac{1}{4})^2}{\frac{1}{4}}} - (2.000)^2 + 30^{\frac{1}{2}}}$$

#### 5.2.7 Variance

Tivinocuse i i x and traditivi tilanto (tili piling as ties denote (cf.)

 $g_{\alpha\beta} = g_{\alpha\beta} + 2$  , then we set  $g_{\alpha\beta} = g^{\alpha} = 100$ 

Meanwhath rise are the information and forms, we highlight the  $\sqrt{V}$  frames  $-\sqrt{V}$  and  $-\sqrt{V}$ 

The angle the sign is a payonal of parallice that and we

## 5.2.8 Coefficient of Variation

The standard deviation is an absolute investigation of site  $\phi$  and the region of the used to congruency variables  $\phi$ , we have the  $\phi$  and  $\phi$  are the  $\phi$ 

The plot of this permanent is are both hydrograph white meanturer forecasts after decode  $\pm 0.01$  variables (FV).

$$C_{2} = \frac{c}{a}$$

which miss notices also covaling in dignerate mean or the non-less  $\epsilon$ 

(Wile of CDCC) eserting as a re-pertuga,

$$\langle M^2S \rangle = \frac{m}{n} \times 100$$

What are paint, day sets, the betaled with engar cours of Sees, a more validate rices on weight in as compared to a day regulate less envisors if these

#### For example;

without the section of the section

Becomes send variably believed for introductions is (with a date of parameters also denote year regime). We were not two appropriate the development x

## 5.3 Probability Distributions

### 5-3-1 RendonsVeriables

 $\label{eq:control} Felometric Helmonth is performed by a control of the second submodel of the control of the section of the$ 

For two less in total grade was a little of the estimation of the earth which real companies grown the separation of  $\theta$  and  $\theta$ . Then some may be all therefore in  $\theta$  is an experiment of the experiment  $\theta$  and  $\theta$  is a property of  $\theta$ . Such that  $\theta$  is a contract of  $\theta$  and  $\theta$  is a property of  $\theta$ . Such that  $\theta$  is a contract of  $\theta$ .

Also integrables is sequenced to the object of the sequence of the proposition of the content of the sequence 
Be accept to velocitians or may be the sidecerning applied outcome of the paper ment, see may aveign propabilities to the paper be applied to the paper be subject.

Types of Rendom Variable. For conjugation, sy Leptinon-less confidences

**Discrete (fendion) Variable:** A wards on Pips can large one waits if a new procedulant of yourse

Conditions (and an Verlable: A validate transplantation with High procedure temperature) as respectiveness.

Brample is denote all e volumes of logs this  $\theta(0)$  in logs. Now a may be a sixt Bermani  $\theta$  is plus any of which were e a may take

## 5,3,1.1 Probability Density Function (POF)

 $_{1.9}$  and partnable is regardanced,  $_{\rm col}$  is PDF, while cell of function 0.9

## 9.9-1.2 Probability Mass Punction (PMF)

,  $\phi_{\rm c} \to e^{-1}$  increases, the contradiction in FMS and is called the first term of the contradiction of the

## 5.3.7 (Natribution)

2888 from long we get a development of the state of the discrete distribution (the section  $\pm$  98% of the module 18888 of the state of the 18888 of the state of the st

Stamples of the rape describings are owns of  $(0.5\% \pm 0.00)$  and hypothesis with distributions

jasa pisakitas ir parija dari batanganga kelikang kanna atau terputah disakita mula

## 5.4.3.1 Proportion of Docume Distribution

$$\begin{aligned} & \mathbb{E}_{\{\hat{x}^{(i)}_{i}\}} = & \mathbb{E}_{\{\hat{x}^{(i)}_{i}\}}(\hat{x}^{(i)}) \\ & = & \mathbb{E}_{\{\hat{x}^{(i)}_{i}\}}(\hat{x}^{(i)}) \\ & = & \mathbb{E}_{\{\hat{x}^{(i)}_{i}\}}(\hat{x}^{(i)}) + \mathbb{E}_{\{\hat{x}^{(i)}_{i}\}}(\hat{x}^{(i)}) + \frac{1}{2} \mathbb{E}_{\{\hat{x}^{(i)}_{i}\}}(\hat{x}^{(i)}) \end{aligned}$$

 $egin{align} egin{align} eg$ 

## 5,3,3,3 Properties of Continuous Distributees

$$\begin{split} \int_{\mathbb{R}^{2}} \mathcal{D}(x,y,z) &= 1 \\ \int_{\mathbb{R}^{2}} \mathcal{D}(x,y,z) &= \int_{\mathbb{R}^{2}} \mathcal{D}(x,y,z) dx \text{ for } x = 0 \text{ f$$

## § ន ) Types of Matribuរាសារ

#### Discome Contributores

- . Galled like op her tylte
- Reverbig (optibile)
- Since property of early 20th at 201
- $\mathbf{r} = (r_2 \mathbf{v}(\mathbf{r}), \mathbf{u}) \in \mathbb{R}^{n \times n} \mathbb{R}^{n \times n}$ 
  - The state of the state of the

#### 53.3.1 General Decreto Distribution

uch from a rispector pandon, kaj nagle-

A while to also the values of a versus contrapting to probability whiles  $\omega(x)$  is small as its precisality distribution to the contract.

#### Example

Let X I = -e buffer which some since single independencies

ther probability defection to each a given by

in this to see p(x) to some finited values of x and x is to non-non-zero y, as to less not example shows

For example, let - be the sum of the numbers is a live on a patin't by I nown.

for will dip behalfly distribution to the table of containing as for even

Notice that here only been warre for all you switch.

are apposite action while

inherite case of striple Too

$$\begin{array}{c|c} c & \frac{1}{2} \overline{2 \cdot 3} & \frac{1}{2} \cdot 6 & \\ 0 & \frac{1}{2} \overline{1 \cdot 1} & \frac{1}{2} & \frac{1}{2} \\ 0 & 0 & 5 & 8 \cdot \frac{1}{2} \end{array}$$

 $400 \pm 0.1$ 

$$\Sigma \pi(r) = \frac{1}{6} \cdot \frac{1}{3} \cdot \frac{1}{6} + \frac{1}{6} + \frac{1}{5} + \frac{1}{6} = 1$$

From SA we table, we can demouse the following

$$\begin{aligned} & \psi(x = a) = \frac{a}{8} \\ & (2x^2 + b) = \frac{1}{8} \left( \frac{a}{8} + \frac{1}{8} + \frac{1}{6} + \frac{1}{6} + \frac{a}{8} + \frac{1}{8} \right) \\ & (2x^2 + b) = \frac{1}{6} \left( \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} \right) \\ & (4x^2 + b) = \frac{1}{6} + \frac{1}{6} + \frac{1}{8} = \frac{3}{8} + \frac{1}{8} \end{aligned}$$

Abortion (where the particular field operated on the  $\chi$  distribution of  $\psi$ 

$$\begin{split} & \Sigma(x) = |\Sigma(x)| \phi(x) \\ & b(x) = |\Sigma(x)| \phi(x) - |\Sigma(x)| \phi(x) + |\nabla(x)| \phi(x) \end{split}$$

Figure reneally value to a self-serment as a see aggreent of a sile infinite number of right as that a specialistic set of the second theorem  $x_{ij}$ 

The property by the explanatory of Y for the explanation entires that  $\mathcal{L}$ 

 $s_{\mathbf{G}}(\sigma) = \sqrt{g(x)}$  , which is no started in Twistforset z.

App реджение very microstatication (дк) multiply be builty. We no lo boost

$$\Pi_{S}(r)_{i,j} = \mathbb{E} g(r) \mathcal{Q}_{i,j}$$

figrasa 50 au

$$\varphi(y^{i}) = (\sum y^{i}, \varphi(y) \circ \varphi(y) + (i) = \lambda (y^{i} - 1) \circ \lambda (x^{i} - 1) \circ \lambda ($$

 $\mathbf{e}_{Y} + \mathbf{e}_{CMMB}$  (if  $\mathbf{e}_{AMMB}$  ) and  $\mathbf{e}_{AMMB}$ 

$$\begin{aligned} \mathbf{r}_1 - \mathbf{r}_{(2)} &= -(r_1 \circ z) (\mathbf{r}_1 - r_2) \cdot \frac{1}{6} + 2 \cdot \frac{1}{6} + 3 \cdot \frac{1}{3} = 3 \cdot \frac{1}{3} \\ \mathbf{r}_2^2 - (r_2) &= -(2 \cdot 7)^{2/3} + \left[ (2 \times 7)^{2/3} \cdot \frac{1}{6} \dots + 6 \cdot 1 \times \frac{1}{3} \right] \cdot (2.5 \, \text{n}_1 + 2.917) \\ &= \left[ \frac{1}{6} \left[ \frac{1}{2} \left( \frac{1}{3} \right) + \frac{1}{2} \left( \frac{1}{3} \right) \right] \cdot \left( \frac{1}{3} \right) + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] \cdot \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] \right] \cdot \left( \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left( \frac{1}{3} \right) \right] + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right) + \frac{1}{3} \left[ \frac{1}{3} \left( \frac{1}{3} \right$$

## Properties of Especiation and Useismus.

 $\gamma < \sin \phi + \cos \phi$  and two less given we hance the  $\phi$  as  $\phi > \phi + \phi$  constants.

$$F(x) = h(x) = h(x) + h$$

$$\mathcal{L}(\mathcal{H}_{i} + \mathbf{0}) = \mathcal{R}^{1}(\mathcal{H}_{i})$$
 (4)

$$\mathcal{L}(S(t_1+1), t_2) = \mathcal{L}^2(X(t_1) - \mathcal{L}^2(Y(t_2) + 200) \cos(h_1 - h_2) \qquad ... \text{ (PS)}$$

 $\sim \pm i a \cos(\omega_{\rm p},\omega_{\rm p})$  oprese with a covariance be  $\sigma \leftrightarrow \infty$  and  $\sigma_{\rm p}$ 

 $P(\omega)$  and  $Q(\omega)$  replies also than equal  $|v_{j}\rangle=0$  and the above formula reduces to

$$V(\mathbf{r}_{i}, -\mathbf{r}_{i}, t) = \mathcal{A}[V(\mathbf{r}_{i}) + \mathbf{r}^{2}V_{i}, t]$$

$$(31)$$

jigi yagari la ilmmotove kumus wa 640,657

$$\begin{split} \widetilde{\omega}(\mathbf{x}_1 - \mathbf{x}_2) &= \mathbf{r}(\mathbf{x}_1) + \omega(\mathbf{x}_2) \\ \nabla \mathbf{r}_1 &= \mathbf{r}_2 \mathbf{1} + \omega(\mathbf{x}_1) + \nabla \mathbf{r}_2 \mathbf{1} \\ V(\mathbf{x}_1 + \mathbf{x}_2) &= V(\mathbf{x}_1 - \mathbf{r}_2) + W(\mathbf{x}_1) + V(\mathbf{x}_2) \end{split}$$

Figure 3. Sequential important number of week Named A

$$\psi_{\mathcal{M}_{\mathcal{S}}}(\gamma) = A(\mathcal{M}_{\mathcal{S}}) \otimes A(\mathcal{M}_{\mathcal{S}})$$

). (a maio neopercei l.  $F(\phi) = 50000$ 

gradient is 
$$Cop(x, \theta) = 0$$
.

#### s.s.s.2 Binomial Distribution

Suppose that a lot become  $\eta$  what our consists  $\eta$  and  $\eta$ 

for personal Haling regions and this position with modify in a suggestive probability for a Halinet reference to a concline -2, are z-1+ y from eq.

The Garania label is a engaging when expense on performance, since the descentiated with  $2a \pm a + b = 1$  and a + b = 1.

- Only 8 reliables are only alleged each failing.
- $z_{\rm tot}$  . Proposally, if suppose galaxy, lettery (1  $\pm$  p), whose earlier form Main the z
- $\theta$  . The mala one statistically inconservent, to the outrobe of the malabasy is in the colours of  $\omega$  , biard to the new  $\omega_0$

Theory especiation is were collected in fall owing topoc comprometies.

- 39), мосто ве во к
- (c) Partitions a of the g
- $(\partial)$  , satisfying differentiation from a finite partial afform
- (ii) such that  $\omega = 0$  without two open that for infinitely expension.

The mobels to all this image associations from the site given by the site many about this formula,

$${}^{\alpha}X = (1 + \alpha i)$$
 ,  ${}^{\alpha}(1 + \beta i)$  .

Where  $\mu$  is the property of  $\mu$  successfully by standard  $\mu$  , in the property of failure.

#### Esumple 1.

the discount on two evides to the probability of golding resemble 8 siego.

#### Solutions

$$P(1-2) = 100 \log \left( \frac{1}{5} \right)^{2} \left( \frac{5}{50} \right)^{2} = 0.2507$$

#### Etample 2,

The longer of the first produced by Albertain company of the Tale size with a cosmit y Colling condition of the South for the Community of the South for the Community of the South for 
#### Salukion:

If all gifts number of Ja'schale for the h is  $p_{\rm eff}$  ages, the -1 is a pinormal variable p Unparameters of 0.0000. Hence, the probability that a 1+1-kegg will not strong people of the

$$\begin{aligned} |\nabla X \wedge A| &= 1 + |\{ (\nabla X \otimes B) \}| + ||A \otimes A| + ||A \otimes A| + ||A \otimes A|| + ||A \otimes$$

მინით ცხო დანები ენი kaues და იხონი უფიტერიულ

### for Shembi Distributions

#### CANADON OR Reference

Afail er gestausfahrtuuren (20 m.g.)

$$\frac{f(d+d)(p(q))}{d(p+1) + p(q)}$$

$$(1)$$

Britishing (1) to (i) we get

$$\frac{\widetilde{C}(t+2)}{\widetilde{C}(t)} = \frac{2}{2} \frac{\mathcal{D}_{\text{odd}} \sigma^{\text{odd}}(t)}{2 \mathcal{D}_{\text{odd}} \sigma^{\text{odd}}(t)} = \frac{2}{2}$$

$$\frac{-(r_1^{-1})^{\frac{r_1^{-1}}{2}}}{r_1^{-1}(r_1^{-1})} = \frac{(r_1^{-1})^{\frac{r_1^{-1}}{2}}}{r_1^{\frac{r_1^{-1}}{2}}(r_1^{-1})}$$

$$f(t+1) = \frac{(n-t)\omega}{(n-t)(Q)} \tilde{f}(t)$$

#### Example 3.

100 along a Hin awo il del nondese espectod valet 6. Why is the categoric tres in the compact of 857.

#### Solution:

$$\underline{\mathbb{C}} \mathcal{S}_{i}^{n} \to \operatorname{RE} \left[ \mathbb{C} \left( \operatorname{Pi} \left( \mathbf{S} \right) \right) + \operatorname{RE} \left( \operatorname{Pi} \left( \mathbf{S} \right) \right) \right] \right]$$

an, it, bind 100 year accessors in to

$$g_{\rm AC} = g_{\rm T} \left( 1 + i \phi + i 00 \times 100 \times 100 \right) = 1.50$$

до, у и мисле из по м'тет от Us — 15.00.

## 5.3.1.2 Hypergeometals Distribution

q que ambabal y ananque ha a distribucier care of the assumptions of or or or distribution pela disclor and representantial describes on peute in the larger speechypolities in the displacement of the implacement appears in what of each plant will can see one more from a in the population.

#### Example:

Hipresia 10 liggreen in a sabety de och sam polosika and 4 ster of core had. Fö suggestioning whet from provide we wro, kellouting strike hat excellent pluncherwis :m15\*#-0



#### Sulcation:

The obovers is formula in Applied by hypothesy paint in its author law tables. D is defective and BD imes condend imes Cart.

$$m\lambda=0)>-\frac{N_{\rm C}^2N_{\rm c}^2C_{\rm b}}{10C_{\rm b}}=0.5.$$

fine stated of sixem can be gonerated. The distribution three twike it is runned to delect to 1.040012.

 $\eta_{\mathrm{obs}}$  provides the variety 0.201%

$$\sup_{t \in \mathcal{T}(S_t, t)} |C_t| \leq \frac{C_t}{2 \log t}$$

In six, no regenge where given halos in all we problem.

from all well promise for a section of other fill earlier

$$\begin{aligned} \varphi(x,y,t) &= -\frac{2}{\sqrt{2}} \frac{e^{2} C^{2}}{\sqrt{2}} \\ \varphi(x,y,t) &= -\frac{2}{\sqrt{2}} \frac{e^{2} C^{2}}{\sqrt{2}} \\ \varphi(x,y,t) &= -\frac{2}{\sqrt{2}} \frac{e^{2} C^{2}}{\sqrt{2}} \frac{e^{2} C^{2}}{\sqrt{2}} \frac{e^{2} C^{2}}{\sqrt{2}} \\ \varphi(y,y,t) &= -\frac{1}{\sqrt{2}} \frac{e^{2} C^{2}}{\sqrt{2}} \frac{e^{2}$$

Глеркун- дертий субат бироти хе бе жиша тө өгтөгө дөөрөгүнүү авто кож

Construction collection constructions of the animal strate of the 2

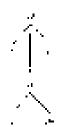
i printis nobjet kisto gravi i vilnou. I vilkovnot Lilikovnis i le probabili pri sovicije ski dravniki nob rates 17

had a prayment in the problem is

$$f(\Sigma_i = i) = \frac{f(i) - 2}{i} \frac{\Sigma_i}{g_{ij}}$$

This all eigens a to multipositive eigenmants in general  $\lambda$ 

$$\varphi(t) = \mathbb{P}\left[\left|\frac{t}{N}\right|\right]$$



## 5.3.3.4 Geometric Distribution

Consider reportantials of a Bondon in operation, a with a regarder of a locastions of a 1. Politically decreased in the decrease in the process of the proce

$$\frac{k}{O(\nu_{i,j}^{\prime})} \rho = \frac{2}{2^{O}} \frac{k}{g^{\prime} \rho} \frac{4}{g^{\prime} \rho} \frac{1}{g^{\prime} \rho} \frac{1}{g^{\prime} \rho}$$

how is from a will exposure a summary j , to accommutate a sequence ( j+1 bit matrix and sequences).

$$\hat{\sigma}(S) = \hat{\sigma}(s) + \hat{\sigma}(s) + \hat{\sigma}(s)^{2}$$

The geometric condition is gradient for the problem of the problem of  ${\mathbb Z}$ 

### Paints to Romember:

no lle agua lea ortada llancak mindentsiski OLO(H). The c

$$1 - L(x) = \frac{1}{x^2}$$

$$Z = |V(x)|^2 \gamma + \frac{\partial}{\partial z}$$

 $\sim - C_{\rm constable of solitons} F(k) = + - \gamma^{\prime}$ 

$$A = \pi(x) \circ (x \neq y)$$

Former distribution processors for the great bulk of moreovy properties to regardent at ages of the 6-4 particles of  $C_{0}$  and

- ты кайын жайса арыны Hespelbeem www.no-ekongumentok quimante elektripeccam. Аугаусын ili i sec
  - (6). Find the we extend that Let  $\Delta$  or games that  $A_1$  age
  - (b) If not the probability for half All rays in all soler diggraps
  - The Phothe properties the Always for a mestical the cumoment good for a Qinto  $\alpha$  early only gibble skills a covariant group.

#### Snl, J

This is a geometric flag bundlewith the CA  $_{\rm S}$  of a = 0.6 (A power 11) is a great

$$(0) \quad S \cap \{ e \in [n] : -\frac{1}{n!} = \frac{1}{n!} = \lambda_n$$

- (iii) The bisy way A proyect, carridgements if A = 1 since incomparison Tilts  $A = \Re a \otimes a = A^{-1} \cdot (0.002 + 0.4)_0 = 01$  eq.
- (5) Hare Amust will an Ogstrike.

$$\mathcal{F} = 10.0\%$$
 . A (ALC) =  $a = 2.7\%$ 

## 5.3.5.5 Polsson Distribution

A sympletic variable X (as X) on Y is all this polarized X, Y is the Y solution by Y for Y is a function Y and Y is a Y constant Y in Ypalaryta at to same a viji

$$P(x-y) = \frac{e^{x^2} \frac{\lambda^2}{2\pi}}{2\pi}$$

gar Paleson distribution:

$$\begin{aligned} M_{\rm MM} &= F(x) = 0 \\ g_{\rm MR}(x) &= F(x) = 0. \end{aligned}$$

Therefore,  $\mathbf{e}_{ij}$  cancely a neglection can be  $\mathbf{e}_{ij}$  in Prospers a case, which is well hold equal to  $\mathbf{e}_{ij}$  is starting  $\mathbf{e}_{ij}$ 

 $\dagger$  are  $\lambda$  is sociege funity, of exact effects of exact in a conservation by  $e^{i\phi}$  at  $E^{i\phi}$  ,  $\lambda$  and A enter a is rout the compacturer is a chave that the IPA.

Resumence Relation  $(r,\lambda)$ 

$$\mathbf{u}_{\mathbf{A}} = \frac{\mathbf{s}^{-1} \mathbf{r}^{2}}{2} \tag{1}$$

$$F(x, x, y) := \frac{e^{\frac{x}{2}} e^{\frac{x}{2}}}{4\pi^{2}} e^{\frac{x}{2}}. \tag{6.5}$$

με : iditπq (i) Ly li t

$$\begin{split} & \frac{G(x+1)}{G(x)} = \frac{2^{-1} \lambda^{\frac{1}{2}}}{(x+1)!} - \frac{x!}{(x+2)!} \Xi - \frac{3}{2^{\frac{1}{2}}}, \\ & - G(x+1) = -\frac{3}{1+2} E(x). \end{split}$$

#### trample 1.

Alger sin disport. — Caves on an everygo of 4 Hil-Franzilia incom What is the **prob**ehilly dry in a mostli ig alson a particle 21 (  $\pm 452\%$ 

Sulucion:

 $\chi = \chi_{\rm d} + 25\,{\rm cg}\,{\rm g}$  , since of examples and time . Also Geographian.

z=4 an equal of German are splittering specified interest on equal (

\_ 1557

 $\chi_{ij} = (L_i^{(i)})_{i \in I \cap I} (A^i = b).$ 1.016.0000

 $1 = 4 \times 2 \cdot 3$ 4 Y = 1

has separated in equal as sold operated in Z(t) = (0, t+1)

$$\operatorname{Hom}(B) = \frac{\mathbb{E}[\frac{\partial B}{\partial B}] - \frac{\partial^2 B}{\partial B} + e^{i \Phi}}{2^{n-1}} + e^{i \Phi}$$

Produce vily Prospo in inhibition in a used in an approximate billion at piece but consider an inversely generally see യുട്ടു - ബ്രൂ ethanidies - അവദ്യാന് സ്വീട്രി - പ്രിഷന്തുന്നത്ര നാല ശ്രീഷന് വേദ്യം കഴിൽ target and it is very could the require Mass. We also be according to the Helbertz  $\alpha$ 

#### Example 1

A partial company sets magnes we you be now to be a first of 10,000 floor according to a saddler. The g -interval at a the priority of g , we fall given in the exert

Salutjon:

318

$$\frac{2 + 2 \cos x \cos x}{1000} = \frac{1}{2}$$
 
$$\sin x/2 = 2 \frac{x^2 (1/2)^2}{2} \cos x/382$$

## Community Distributions:

- PaymerCommission Lights
- $3 = \mathsf{Tapona}(\mathsf{id}_{\mathsf{A}})_{\mathsf{D} \mathsf{D} \mathsf{M}} : \mathsf{I}_{\mathsf{A} \mathsf{D} \mathsf{D}}$
- s. Bearg a density or judge
- Production and Report
- 4 Roma Seatch on

## 533.6 General Continuous Distribution

a. Alberta symbology rand a spectrum is considered by Dunah divided by define (b,a,b) symbology is  $\operatorname{supp} (\mathbb{R}^n)$  if for  $\mathfrak{C}$  ) which is such a fluid and  $\mathfrak{C}$  that

$$\langle \alpha, (\omega \otimes \lambda)^{\alpha}, \alpha \rangle = \int \alpha_{\alpha} \langle \alpha \rangle_{\alpha} - 1$$

The deposited with  $\omega_{0}$  ,  $\omega_{0}$  we have

$$e^{-i \mathbf{r} \cdot \mathbf{r}^{\prime}} e^{i \mathbf{r}^{\prime}} = \int\limits_{-\infty}^{\infty} \psi(\mathbf{r}) \gamma_{\lambda}^{\prime}$$

.::.

$$\begin{split} & \langle S_{\mathcal{F}} \rangle = \langle \Delta \phi^{2} \rangle + \left[ \nabla_{\mathcal{F}} (\mathbf{P}_{i} - \int_{\mathbb{R}^{2}} g S_{i,j} / g \phi_{i,j} - \frac{1}{2} \frac{\partial}{\partial x} \partial_{x_{i}} \partial_{x_{i}} \partial_{x_{i}} \right]^{2} \\ & \langle \sigma_{i}^{2} \rangle = \langle J_{\mathcal{F}} (\mathbf{r}) \rangle \end{split}$$

Tyclorus veltvoja uppolity unodo i (sumpli), es piso da ladino su kalbiliki dalnour on funccion, ja pison sy Mai wales

$$|10\rangle = |\langle \mathcal{L}_{\mathbf{k}} \mathbf{L}_{\mathbf{k}} \mathbf{L} \rangle - \frac{1}{2} f(\mathbf{r}_{\mathbf{k}}^{*}) f_{\mathbf{k}}$$

**floce:** Figure (x) is then for the conject three above by density that of (x,y) such that (x,y)

$$M_{\rm c} = \frac{\sqrt{r}}{\sqrt{r}}$$

## 5.3.3,7 Uniform Distribution

Ciganara we say that  $\mathcal X$  is a uncomplicated mixed pictors the training (a,b) if its presenting  $dc, x_0$ filter on a given by:

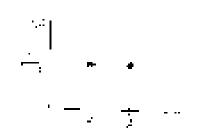
$$\begin{aligned} \phi(t) &= -i\frac{1}{\sqrt{2}} \left[ \phi(t) - \frac{1}{12} \cos(k t) \phi(t) \right] \\ &= -i2 \cos(k t) \end{aligned}$$

Since Sylve a servicent, a linear contribution on a set (\$ and organity in object forms)

## Graphical Representations

For Charlete Uniform Distributions

$$\begin{aligned} &\text{Modiff} & & F_{1}(y) = \frac{6+\alpha}{2} \\ &\text{We shooth} + & \varphi_{1}(y) + \frac{21-\alpha}{2} \hat{f}_{\perp} \end{aligned}$$



#### Example:

 $\tau_{\rm A,B}$  ). The magnetic term used (C), for each threship propagation that

$$B \subseteq \mathbb{R} \times \mathbb{R} \times \mathcal{G}$$

#### Salution:

$$\begin{aligned} \phi(t) &= \frac{1}{100 + (t^2 - \frac{1}{10})} \\ &= 0.5 \text{ or } t^2 + \frac{3}{100} \text{ or } t^2 + \frac{3}{100} \\ &= \frac{2}{100} (t^2 + \frac{3}{100}) \text{ or } t^2 + \frac{3}{100} \\ &= \frac{1}{100} (t^2 + \frac{3}{100}) \text{ or } t^2 + \frac{1}{2} \end{aligned}$$

### 5.3.3.7 Exponential Distribution

A compared when the value between the properties the only remote the grant  $r_{ij}$  when  $r_{ij}$  is the i i i by

$$\frac{1}{2} \frac{1}{12} = \frac{1}{10} \frac{1}{12} $

is say; you wit appropried the metrophysics between the periodical in The publishes eight outside that an ordered so depending the metrophysics is given by:

$$\hat{\rho}_{1}(g_{1}, \omega_{1}, g_{2}) + \hat{\rho}_{1} = \int_{0}^{1} 1 e^{-i k_{1}} g_{1}^{2}, \quad \left( -g^{2k_{2}} \int_{0}^{1} e^{-i k_{1}} e^{-i k_{2}} dk_{1} dk_{2} \right)$$

### tur Exponential Distribution:

#### Enamel®:

 $(a_1)$  is constitutive engine to a phone that it is not by i - so exponential and i to i - i gate i - i

 $\lambda = \frac{1}{2} \ln k v$  be as three in a solved presence you also be not assumed as by the behavior of the k

Ingly are the 1990 to wa

- $(g) = d_{\theta}(x_{\theta}) \cdot (x_{\theta} 1) \cdot (x_{\theta}$
- Jug Respect of the Winterstate

#### Celukions

Let  $(v_i)$  be the result of the  $v_i$  and considering particle of the particle of the  $v_i$  and the constant of the  $v_i$  and  $v_i$  are  $v_i$  and  $v_i$  and  $v_i$  are  $v_i$  and  $v_i$  are  $v_i$  and  $v_i$  are  $v_i$  and  $v_i$  and  $v_i$  are  $v_i$  an

$$\begin{array}{lll} (25) & (\frac{1}{2} 2 + 2) = (1 - i)(x + 16) \\ & = (1 - i)(x) = (1 - i)(x + 26) \\ & = (1 - i)(x) = (1 - i)(x + 26) \\ & = (1 - i)(x + 2) = (1 - i)(x + 26) \\ & = (1 - i)(x + 2) = (1 - i)(x +$$

### 5338 Normal Disalbutton

We say that also instructed one contacts of  $\phi$  in any material and one of contact and  $\phi$  is the proposal  $\phi$  is the object by

$$\langle p_i \rangle = \frac{1}{\sqrt{2\pi \alpha_i^2}} \frac{(1-\alpha_i^2)}{(1-\alpha_i^2)^2} = \frac{1}{2\pi \alpha_i^2} \frac{(1-\alpha_i^2)^2}{(1-\alpha_i^2)^2} = \frac{1}{2\pi$$

The constitution Not believed and  $\sigma$  are , at segment  $\sigma$  assume

### For Northell Distribution:

### 3.3 kg. I Standard Normal Distribution

Since the for  $\delta(n,n)$  values with plant of and the integral cancelly be available of the probability is not represent the substantial expectation of the substantial probability of the standard of the substantial expectation and the substantial expectations are integrally as the substantial expectation of the substantial expectations are integrally as the substantial expectation.

where  $e^{i \hat{\rho} t}(x, \hat{m})$  also be spanished to example the problems, we can be by a constitue tender to be given greatern and discontinuous discontinuo

of the responding the first 400 of well-productly the blowing for the respon

$$\frac{\pi}{2} = \frac{A - \lambda}{3}$$

Where Till would standard homes yasta w

For Stangard Wormsteil Inggrego

$$Q(x_0) = |\mathcal{T}(Q) - 0|$$

We are 
$$y = y/5 - 1$$

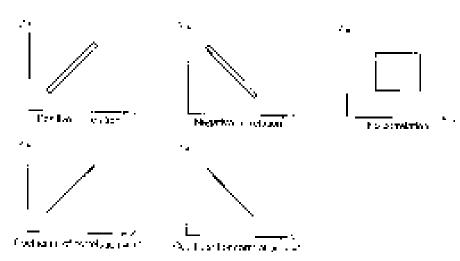
length it is standard from all that but in the special partitions the M(0) - phistripution.

**Correlation:** A point well two particles you distant not explain that an increase in the law execution to all your propagation in repose in the other than the veries as are veries by control or i

Editatemble, the glacifold grop values with the notes in Followich

Pilet variable, very misuonia eug fizi fizi nainus atvotys se saulų fionitis no melationio anni  $\alpha$  paradosa.

**Scatterer Colidiagram:** When we plot the purceponding value of two validates itsiang a extra dark and and and and and and and and a curvature of the figure look.



Factive on realist magnetical contress that one exact the reflect of the valid to also be two and begands contest in means that a money a sittle transpers from our end attorwant to describe a set stands to veget that only depends only the third to contest on.

Order product a regionage

$$\frac{1}{2} \frac{1}{\sqrt{2}} \sin \frac{-\frac{1}{\sqrt{2}\sqrt{2}} \sin \frac{1}{\sqrt{2}\sqrt{2}} \sin \frac{1}{\sqrt{2}\sqrt{2}} \sin \frac{1}{\sqrt{2}} \cos \frac{1}{\sqrt$$

upgramm to on confirmal ballet #1.5.7%

- $g=1, \dots 0$  , then  $g_{\mathbf{H}}(\mathbf{H})$  and to follow the
- $\{a_{i,j}\}_{i=1}^{N}$  in the linear square left group was in a single
- ration of the property geles inclaimed a solon.
- $\rho_{\rm eff} = 10 \times 100 \, {\rm km}$  . The arthorous was in a composition
- $(c_1^{(i)} \circ f) = c_1 \circ c_2 \circ C_{i+1} \circ c_1 \circ c_2 \circ c_3 \circ c_4 \circ$

**Regression**: If the  $\phi$  is the diagraph in Engles were half as a progression of some  $\phi$  and  $\phi$  are smaller than the  $\phi$  and  $\phi$  are a first curve is an ed the curve of regression.

By also are given altermore, in writtenship and the corresponding costs of the exactly of the exactly of the contract of the costs of

**Line of Regressions** Wide The Curve to display in the Jury get of the vice of agreement Affine or regression in the smooth transfer to be sense to the given medium of your relationship in played houses were disprecipited medium by

in approximation of the contraction of a like contraction as a contract of a like body set which the approximation of the contraction of the cont

This solution is the size for people that are not increased we desire an arrivation between them, also required as the controlled will be displayed and on a size of a controlled will be displayed as a whom equipment represents an arrays to explane the desired.

 $p_{i}(q_{i},q_{i}) = \text{all approximation in } (PACS) PA$ 

$$y = 2 - C$$

Since the theory is the state of the state

$$(2.7 \pm 0.4 \pm 0.20)$$

where give is number of earth once use of condition

$$\frac{2y}{r} = \pi \cdot s \frac{\pi^2}{r}$$
$$= \pi \cdot s \overline{\pi}$$

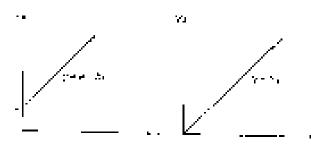
<u>...</u>

where  $\pi_{+}$  is not meanwish when the same time accessed.

The Hills of material mass was through the  $\overline{\rho}$  ).

 $p_{\rm SS}$  instead, the rather further a particular weight

$$t = \varphi = 0(x - y),$$
$$x = \varphi x$$



5000 W\_



Q.1 Lef 代月 (Harelo the interstate of the even) 中 (Sixon ア(A) = 1 円(A) 102 the values of 来来の and 所名(A) respectively steril

ma nei 1921

. 191 - Jal

re<u>rio</u>us CATE and ESE Questions

ca 157 f

051,15

188 CATE 2003 | 1 mark)

2.2 A per coma e 10 servas, y et affich ant de nive l'exprisacent d'avreiter con una reparen en. de la capitation sa editoile a surces sufficiely and ee

(4) JUDE

abi 60%

[ Yi + 8 +8

Troy has need the sec-

[OL GATE-POLITICAL)

© Sill A box do revisio block emple redibetivi. Two be to we remain y disked desirable growths from the probability to be in particular to the probability to be probability t

[ME\_RATE-2003, 2 herke]

Q.4. A premark one xist of two magazine according sequences at Lottle (response to the expectation of drep back) filty concly time, as at inverte conelectromic managed that sky replacements of the dimension were than sky replacements of program algorithm.

$$(20.500) + 2.07 \qquad \qquad 0.9 \int_{0}^{1} \eta(z) \Psi(z) dz.$$

$$\langle \langle g \rangle \int_{\Omega} h(\mathbf{x}) \hat{g}(\mathbf{x} - \mathbf{x}) d\mathbf{y} = \langle \langle g \rangle - \sin \lambda_{1} f_{1} f_{2} f_{2} \rangle_{\mathcal{A}}$$

TBS\_GATE-2003, 2 n <sub>SIRE</sub>1.

Q.5 Anyomuldar into restrict selection ends of the process of the process of the process of the Sied model to both by the point of the Sied model by the point of the selection 
w. 0340 (MISSS)

00 tubro

ac) 0:038

[CE 3A  $\pm$  2004  $\pm$   $\pm$ marks]

Q.8 An architetion coparties telement the source of estate and contract estate and respondent to estate and Eq. (1996) and the source of Eq. (1996) and the source of the contract estate and the contract estate and the estate and th

12] []

 $d \in \mathcal{H}_{\infty}$ 

 $(c) > \omega_0)$ 

:::[767£

[05] 3A E-2004, 2 marks[...

Q.7 In this is a not because the times, which is the proposed of the control of payment of the quantity.

 $\omega_{\rm tot} = 21$ 

(5) (7)

 $\hat{\alpha} \in \mathcal{F}(0)$ 

id: 34

(CS 35 ± 200/, 1 mark

Q 8 Lead their conception system, and dystem about 1 temporary and the conception. The probability The probability of a probability of the period of a probability of the period of t

 $(\chi_{i}^{*})^{2}(\mathbb{C},\mathcal{I}^{2})$ 

 $\operatorname{sim} (C_i)/2^n$ 

n ja 192

...(5) 1/2° ,06, 0,4™-2004, 2 ma kali

(2.6) From a process correctly in wying cause, with Nordal are given in thrandom in which the process by the guilt and convey by Kingam from parallel NOT replaced from

;;; ie:

...: <u>†</u>2

 $\delta := \frac{1}{C2}$ 

oti ja

[M=, 644, 0-2004, 7 marks].

Out of milet is rore may be cased who the business place will into the world in the country of the will into the world in the country of the

(4) 7.35

ıĿ.

164, 455

∴n e-3.

gos gale soot 2 morks).

 $0.11 \pm 0.3$  and  $0.3 \pm 0.11$  (and the second of the pattern of  $0.11 \pm 0.11$ 

 $\phi$  . Necessity and the matter state of the level of the properties of the  $\mathcal{Q}_{ij}$ 

 $(g_{1,1},g_{2,2},g_{1,1},g_{2,2},g_{$ 

= Proceeding (10)

 $\lambda(t) = M_{\rm cold}$  . Observationally sections of the Helminian transition is a component.

 $||\phi_{i}||_{L^{2}(\Omega)} \leq ||\phi_{i}||_{L^{2}(\Omega)}  

[FE] 3,875,8005, 1 hark)

O.12 Alla lost sucher teloc. Tell: Associative (6) concumpatión Modia (exectitional)

(c) ½

ъ . В 2

1: -

1...

\_\_\_\_rpo, ⊵v;;;->005, 1 inax}]

0.10 A simple due is introver tweet is such a fix procedure the thorough sub-fix 0.00  $^{\rm QC}$ 

(5) (6)

(4) (2)

HMC GATE 2005, 2 marks)

Quits Allamont is to seed the element in some observables with the top a positive  $\omega'$  quality observable with the observable  $\omega'$ 

(4) 1/3

(c) 1,5

 $|h| \in \mathbb{Z}^{2n}$ 

րի չև լեր (ֆուն-2(16-2 marks)

One which that a tile present state where  $a \approx 27$ .

 (a) Traines more general Social (ET Joon train monotidiste KA)

(b) In a commente lainburge ind values el o nen hodernámens e afficial e

political positively signestic Herribura — 1000 or modes in 1000

(a) it is in a groupely element distribution for ITCOR's used to ITCOR.

<u>ед, с</u>ата 2005, 1 mark<sup>e</sup>

Q.18 A tot has 16%, do bulke idents, fell items are coosen to comb, in a #15 of, Tilk is acceptly #01 years y 2 of the chosen the lattic collection.

ŧ.

ix) 1.07100

6<u>6 6 103</u>7

... ምር ይይታ

т,с; 0.8974 <sub>Б</sub>МЕ, ЗАТЕ-2096, 1 г.⊗(4).

Q.37 Let 3.4 be the confined a property of office function of a is notifically associated. The observation

 $[\gamma_{XX}, \mu \times \lambda \leq \lambda / 10]$ 

 $\hat{\theta} \in \mathcal{I}(\mathcal{O}_{+}, \mathbb{Q})$ 

(2) (20) 850

 $\int_{0}^{\infty} \int_{0}^{\infty} f(x,y) dx, \qquad (4) = \int_{0}^{\infty} \frac{1}{x^{2}} \frac{x^{2} \left(x^{2} \right)^{2}}{x^{2}}$ 

105 GATE 2005 1 CRIN

ழ்ந்தி Hayard இதன் Not American 200 ஜே. 101 இது நிறுந்து நடிந்திய

 $g_{\theta}$  are conducted at  $\Theta$  and  $\Theta$  for each off g in G and G in G and G in G and G in G and G in G

## Property (4.1. G; 2.P. Starting (5) | Impost D5 (6.)

 $(\hat{g},0)$  fland  $\hat{G}$  with industries of Not. (by ). Fig. must be a comparable

grows address, in Other robe (By P)

(ED GATE SCSS, 1 mark)

0.18 The whole street maps 
$$J = \frac{1}{22\pi i g} \left( \cos \left( \frac{2\pi}{8} \right) \right)$$

[40, 6ATE-2005, 5 mg/kg]

- Q.80 Too Mindred are the summonth in a summonth in the property of
  - $(g_{ij})_{i=1}^{n}(\{S_i\}_{i=1}^{n})$
  - .२८ विकित्र करा जानुसन्तु (तुन्ता)
  - $(2^{n+1})(t) = o(1)(4)(t) + o(1)(1)(t) + o(1)(1)$
  - $(\mathbf{d}\mathbf{f}^{(\mathbf{u})}) = \mathbf{c} \cdot (\mathbf{c}_{\mathbf{u}} \otimes \mathbf{c}_{\mathbf{u}}) \cdot (\mathbf{g}_{\mathbf{u}} \otimes \mathbf{c}_{\mathbf{u}}) + \mathbf{c}_{\mathbf{u}} (\mathbf{c}_{\mathbf{u}})$

IFF, CALL 2006, 2 marks

Q.81 Thee participants Y water As regly to the retrie in exercise. The volume age of completes supplied by a smartained probability of those compiled-checked at classic conser-

Conv <sub>icing</sub>	5 of computer	i nhoài jiy oi being Supplied defecjay	
		<del></del>	
i .	57.	w	
•	:::		
2	121	::a i	
		'	

Byon the adampting sign only a neighborhood with the probability that it was supplied by  $x_{\rm in}$ 

60 0.1 80 0.5 0 L.2

0 f) ( /

序0, 连AIF-2006, 2 morve)

5) PO For each Select I make it is action, or is blaced to the blacket. At the 2 countries we are independent. At element is a losen to me contact a proportion whether Treprobability that exhalls a statement we proper it.

$$s) \left[ \frac{2N_1}{N} A \right]$$

$$|0\rangle \frac{(2t^2)}{(t+1)}/2$$

$$\left( x_{i}, y_{i+1}^{j-2r} \right)$$

1; +

IOS, GATE 2008 (2 marks)

2.23 There are above in a local content, level of the many described, 'supportent' objects in the later condency project from a spectra in (i.e., cach they the same that could be lapsed on the project to the condition of the described as you also will be same but in the later by say, and

$$\begin{array}{ccc} \cos \frac{1}{2} & & & \left( \sin \frac{1}{2} \right) \\ \cos \left( \frac{1}{2} \right) & & \left( \sin \frac{1}{2} \right) \end{array}$$

IOF CATE 2005, 2 marks)

Q.24 A continuous of delegation company (Cinon delegation in the flow from a single potential at 1900 and without representation of delegation and alternative flow.

ign i

:: <u>-</u>,

0 : 3. 0 : 2, 9: 19 ob.

[MF, GATE-2006, 1 Perk]

O.95 Consider the landinuous minks i wondo drivith and shifted and after your

$$\begin{array}{l} 50 = 6 \text{ if } 24x + 4 \le ( \le 0 ) \\ = 4 \text{ if } 4x + 6 \le 1 \end{array}$$

Пів сідопіть: Ну аўстроў по клуут чаповнік.

v1 √5 •

[ME\_GATF-2008, 2 market

Q 29 m anth-pitty versity in such as a Hydronic (iii) =  $(20^{10})^2$  with  $(20^{10})^2$  with  $(20^{10})^2$ 

- Die value (LAG).

(g) (g) A - - - - - ji [ 1

 $\emptyset \in \mathbb{C}, \mathbb{D} \otimes$ 

. ж., т ГСС, GALE-2006, 1 <sub>mark</sub> :

Q.24 A black of insepatink Technological production in the service of launthy meson, \$10 and the less that make the insepation is a foundated the less that make the meson of make the meson of mean of 0.0 and the left or downline of \$2.0 and the left or downline of \$2.0 and the left or downline of \$2.0 and the left or downline that \$2.0 and the left of 
:- A :

الرياشة

(C) 8.11

ត់កំនួច

Cla. GATE-2028, 2 marks)

Q.98 Rubpession unionity and randomly affact a решчин со топ т. н. 20. решцейност (д. 7.  $_{\rm coll} = (800 \, {\rm Mpc})_{\rm coll} = 0 \, {\rm probability} \, \pm 612 \, {\rm Mpc}^{-1}$ an an earlier is a fine prober y charles even in in their nino sel⊷ rabitionii cini sio?

$$\phi_1(\frac{1}{2}) = 0$$

да Мара от лъсен.

[CS, GATF-2007, 2 in soles].

Migg A moded of the had below up probability (Alembulian chica a menual)

$$\frac{19.8 \text{ Vertex}}{19.04 \text{ softly}} = \frac{1}{19.4} \left[ \frac{2}{5.8} \right] \frac{3}{5} \left[ \frac{1}{5} \right] \left[ \frac{5}{1.33} \right] = \frac{1}{10.4} \left[ \frac{5}{1.33} \right] = \frac{1}{10.4} \left[ \frac{5}{10.33} \right] = \frac{1}{10.33} \left[ \frac{5}{10.33} \right] = \frac{1}{10.4} \left[ \frac{5}{10.33} \right] = \frac{1}{10.33} \left[ \frac$$

our periodit, per il on parthe alla we are in 1990.  $g_{\Theta, \varphi}$  , which therefore a mando of the cost  $1/2 \times 1$ gor partimations.

ing same as i all or propagation of a Auf

 $(\gamma)$  same pulps, de coloner de (1,1,2,3)

(c) 1/1/55

167.55

Tel: 0,675-2007, 2 na kali

0.39 wilesaminetro lo contro livro pecció. Pede 1 and Paper 2. The greater that offship of Paper 1.  $\gamma_{3} \lesssim_{2.00} \gamma_{10}  guarant has fered to Papar at the excluding of taring in Page 1 w 0.5. The pelloblished H studyn, kilingin bodi her knaarsis

[65 O.L.

 $(\underline{u}_{2},0.18)$ 

(6) 3 (6)

idi Cah լեր, (գոս<u>ը 4</u>007, 3 marks)։

 $\mathbb{Q}(\mathfrak{Z}^{4})$  is the standard acception in the spectral and of reflector all ignorty sits? Voten and hear 64%  $g_{0}g_{0}$  (where  $g_{0}g_{0}$  ) we is 20 km p=3 3.00 mg en i ارداً معن 10 من اوالية الإيرانية الإيرانية الإيرانية الإيرانية الإيرانية الإيرانية الإيرانية الإيرانية الإيران

(7) 0 (5)14

(L) 0.1857

ngi putatsi

(a) CORRU

[GF, 2A, 0-2007, 2 marks]

Q.30 Ind Albig Museumberge Altri studen in Ashfett. When one of the refactors between expectables  $(igcap_{i})$  so three  $(ar{a}_{i})$  and devalues a  $(ar{a}_{i})$  where policy in FALSE.

 $(a_1, a_2, a_3) = \mathcal{O}(20, 20, 20)$ 

 $(j \in \mathcal{C}(\mathcal{A}), K_j, T_j = 0)$ 

 $\langle g \rangle \otimes_{\mathcal{M}} \langle X | g \rangle = \operatorname{Vec}(X) + \operatorname{Vec}(X)$ 

 $(g_{1},g_{2},g_{3})^{2})=(g_{1}g_{2})^{2}(\Xi_{1}^{2})^{2}$ 

,ME, CATE-2027, 2 marks

 $\mathbb{Z}$  SS to be second by the incorporal Hyperty picking  $p_{\rm eff} = 20 \, \rm particle by 1.250 m _{\odot} = 0.000 \, \rm km ^{-3} \, 2.76$ a pressor se in class delice care the public Through the formula in a constant  $\Delta t^2 = \epsilon^{-1}$  can satisfy Hodge (4) I myonggott a propositi iyol oʻzhin sa ig  $g_{\phi} = g_{\phi} \pi_{\phi} + g_{\phi} \pi_{\phi} = g_{\phi} \pi_{\phi} + g_{\phi} + g_{\phi} \pi_{\phi} + g_{\phi} \pi_{\phi} + g_{\phi} \pi_{\phi} + g_{\phi} + g_{\phi} \pi_{\phi} + g_{\phi} \pi_{\phi} + g_{\phi} + g_{\phi} + g_{\phi} + g_{\phi} + g_{\phi} + g_{\phi}$ ). Only galaxy upper up to be a designal  $\hat{\psi}^{(B)}$  and  $\hat{\psi}^{(B)}$ alcal lous and motion respectively make the

 $p_{0} \neq 0.909 \pm 0.25$ 

 $N_{\rm H} \lesssim 45,0.25$  yn 10.20

(.6) 6.45, 0.55  $\times$  6.000

prince\_1399 to 0.27

rop igare@006 Simarke)

Q.94 A 5 wary's bludest electrosal (\* los sosar el Ar processors askrytak i silvicito sa pulti as ency this step then the model (iii) that the anteres i supernativo di a na didey is the ci el e etan ek mainen vilos villa oso ilben do yogana Hedi at x 🔻 Rudiyara matronada wa lab performing City, Green and Alcoholys Stocks.  $c_{0} = g_{0}(g_{0}) \cdot c_{0}(g_{0}) \cdot g_{0}(g_{0}) \cdot Wonde\gamma \cdot enable g_{0}(f) =$ aloga hykotsile kušosova sortsaaraka) yseph62665<sup>2</sup>1

6 ( 0.24)

(c) 1 Sir

 $(56.0 \, \text{M})$ 

trá ESc

[DB] GATE-2008, 8 merks.

D.35 (e.g. of this see Fig. 1 sec. Wherliften in the Asia) ы дот гу неайс окал**і**ў Эліпраў.

160

eri Ulti

101 To

(5) 16<sup>3</sup>

[ME\_GATE-2008, 1 mark]

ე ვგ ჩიდაკს, მკითიაც talk hon dipuşu fam varu se 5, 12,

therefore points they contain the  $\left(-\frac{2\pi e^2}{3}\right) E$ 

 $t_{\Delta U} \approx 2 \pi T$ (e) 74 f

 $(5) \subseteq 7$ 591 NAT

(ԵԲ, ԹሊՄԸ-2008, 2 marke)

Q 37 . St. Kibera, lander sedagte budwing rust of a sa hadan wiliyin san ili biyin sa karesi ili di d ga anding his maliku silak talah heali ili Did so notice to let  $\lambda+\eta_{\rm e}(H) \cong \mathcal{S}(v) \cap \mathcal{C}(v) \geq 2000 e$ standa e sice alion el 115.

- nt.; 3
- :61.0
- 14 E
- (a) 1

[05, GATF-2008, 2 marks]

G.88 A Principle Record 17 Gines, Who is the polisting for the Variety and pages while Hy habds/r

$$m_{\infty} = \frac{2 \cdot \frac{1}{4} n^{3/2}}{2}$$

$$-16_1^{1-16_1} + \frac{1}{20}^{16_1}$$

IFC, GAIE 2008, 1 mary).

- $\Theta(30)$  An unpotential of Teologia in States, numbered from Little is three filter and just that the last value is said a SSS of the processing that  $|\varphi\rangle$ loop will els twon, the propositive figeding and MACHIEL MORREY LOCK STRAIGHT C.
  - If the probability the, that the is magnificating to  $\gamma$ his Oscariovi Sie u.25. Ali, iono al me cheening rought also seed to that closes by the II е истичния ексоска 56
  - 191 0.456
- ité daggi
- $(21.1) \cap \chi_1$
- 00) 3483

105 GA (4-2009, 2 ma4.a)

- Civilo i tostiki yanga dippedanaki sertatabka  $50^{\circ}5.9$  % to Green to be a line to what I. The District in the property are appears.
  - (5) 1.3.
- 30) 34
- (See 142)
- 200, 200
- 103, GAIE 2009 1 mark)
- Q.4. If the clother step weaper an elegander eguing. training the stage of participations of x
  - jar liž
- 11 25-
- 60 42
- 15. 7%
- (ME GALESTON LINER)
- O.42 The surpose in section also a formed is highlight. The supplementation was probabilities and the supplementation of th
  - $\frac{1}{N} \frac{1}{\sqrt{2}}$

(ME\_GA ±-2009, 2 marks)

 $\Omega \times 3$  The order body to that along the sample smoothy ) definition that the dependence of the contract fields of  $\Gamma_{\rm c}$ ary) sainalac asi

$$P(x) = \frac{1}{1 + \exp(-\frac{1}{\sqrt{2N^2 \pi}})} \sqrt{-\frac{1}{2N^2 \pi}}$$

=15 %... = 000 hard normal design, dimmer range the elastic contains a figure of  $\lambda$  is exponent to  $\chi$ actions with with a time  $\alpha$  the  $\alpha$  -conjugation I diam'r i prewentian o'i py dawaen sijiam SECTION OF

- 160 63 .55
- (01) (0.7%)
- 100 230-4
- AD 2 76 IOF, 6/01, 2009 (Emarka)
- $\Omega^{(2s)/2}$  tok to make 2 wether: I have such a right Here are done from the task a region y = y, ythis wildput improvement, the objectify of Provide American fix indexed by Single trail Superstance y ,  $\psi$  4 targ  $\chi$ 
  - (H) 2015
- (5) (300)
- 151 151 A Q
- ்ற ஆக

IMF, GAIL 2010, 2 marks)

- $\mathbb{Z}/4\delta \geq b c_0$  so which when I she are  $\delta m_1$  balls in a Recessor, technological arms on hydrodase hand. For every normal sale  $x_i$  is very matter than  $x_i \in \mathbb{R}^{n_i}$ tally while the process of the second remains that is really
  - (40, 173)
- 1au 5-7
- 0.12
- •d+4:7

[FE, GALE-991], 2 market

- Q 46 метарыны жарынын экелет байын орулган. If a propert live or a faulty ascenney of any  $\delta$  and  $\omega$  is  $\beta$  . The compary disretors  $\delta_{0,0}$   $\wp_{0,0}$ ээ с жигритаг юж жүнд эмээх «Тиргечий  $\mathcal{C}^{\text{MAR}}$  , given the cases around to any  $(\gamma^{*})_{0}(m)$ with a probability of  $\phi(\theta)$  with the probability of O i potenski gredektretta ngg.
  - $(G_{i}^{*}(\mathcal{A}_{i})+1)=\mathcal{L}_{i}^{*}\left(1+\frac{1}{2}\right)$
  - (b) (1 + 1)(c)
  - eri i Lagg
  - in oo

[OS GATE-2(nt), 2 marks]

 $0.47 \times farming / simple <math display="inline">\sim c_0 perconally (continue)$ If the short interest in the number  $\phi$  , when Leady show that from the terminal of these la kanoo in y

 $\frac{1}{2} = \frac{1}{10}$   $\cos \frac{1}{2}$   $\cot \frac{1}{2}$   $\cot \frac{2}{3}$   $\cot \cos \frac{2}{3}$   $\cot \cos \frac{2}{3}$   $\cot \cos \frac{2}{3}$ 

(1) A. La volta tonde (early contain) ad altromotions and from the giver with a moreogene Term contained in a moreogene Term contained in a more type it with the fixed and the interest in a contained with the interest in a contained with the interest in a contained in a

- ĝaj 195
- PA 455
- 33.14
- 1: 20

108 3/70-2011, 2 marks)

Q.48 There are two contained with Graph County (A. H. on a graph graph below 0 in the first of the problem of the first of the first one of problems of the first one of the

- (6) 10 (9) \$1.74 (9) 10 (8) (9) \$7
  - ... (gg: gg/9\_2011, 1, na/k)

Q.50 A Mark to be a toward limb house. The profit of the that the season that it establishes a full factor ingle primary from the installation.

- 14 153
- $\emptyset \ni 2^{p_{2}}$
- p : 5016
- i (de 52 cum seattusche Lima)

[ES, GATE-2011, Timerk] District states the second one sky less so

- Upg to switching impose space onto also wouldn't be a sufficiently as the control of the switching as the control of the switching the sketching following the major becomes than the constant. The property of the control of the cont
  - gg танк эзэй элэ эгрэн Li Vin Albina sa гөг дэгрэй dar sas kon элэж Бэйлэг
  - or) Index  $u_{(0)}(i)$  is a median of with Y steeds the estimate i for i , i is the matter of i . i
  - $\phi(|\mu|, -\kappa \mu) < \delta$
  - $(\sigma) |\sigma_{\mu} = \nu \sigma_{\mu} = 1$

[GB\_GSPL\_2011, 2 masks)

Q.52 if mo I Year ab convey. The expectation of the sock report from open very line on a fine of the solution of use with the expectation of the concentrate  $A^{1/2}$  ,  $A^{1/2}$  ,  $A^{1/2}$  ,  $A^{1/2}$  ,  $A^{1/2}$ 

- iai F−3:
- lih) m ° €
- 160 o 19
- $\log (1/\sqrt{2})$

(CS, GATE-2011, 1 0 8/A)

O.33 A. The indept counties to sociative times. The processing of setting at least to hereafter a factor of the processing of setting at least to hereafter.

- (S) <sub>SS</sub>
- $\emptyset:\frac{2}{\omega}$
- $\times \frac{w}{D}$
- 3. 3. ss

IMP GAIL 8017 2 Maikst

© 54 A for any service of a near electric for an open and the probability that the content of engine and a odd, s

- (30,105)
- $\{A\} \cap B^{2}$
- $0 \in 2.5$
- 001,000

(μης, εκ., in: GATF-2012, 2 marks]

Q 55 Reprocess We six although a will no prove the second of the period 
- $\omega(-30^{10}$
- (#) 57 2
- 10° 20J
- $100^{-100}$

103, GATE 2212, 2104/88

GLEC in selection made positive and regards salues sub-organic likely to exact the probability of homeomorphism additional value of a sub-organic made at the contract of the

- · <u>=</u>
- apa ÷
- 10° 55
- $\varphi > \frac{0}{2}$

[GE\_GATE-2012, 2 marks]

Q 57 Cartato, where on whom Milliother sales that the main probability 6.6 and the results of the main three institution and the Hellium

- $\gamma_{\rm c}=1$  and 1.84
- $y_0 < thd \, 0.5$
- ibi Caru."
- ... (6) (3) (4) (4)
- AB 0.55 and 0.15.

JOS. GAJE 2012, 1 mark)

Q.58 A pro. Materials recording and Clotock halls. In we have the source Handom cover  $t \in \operatorname{pox}$ one added to the entertheir made general than such as inity Provide some +1 such contains +4 let +6الوالوالية وكالمتا ومواصفا

 $(\underline{z}) = 0.707$ Carlotte A 5000 -4h + 2

"ME\_GATF-2012, 2 mores"

G.LS (See Deposit of the garatics Service at or burneds to be nothing with the fee propositive Jeannack Response to the proposition (person

(4) JH 90) 00 6 201-124 2.5

[BE, GALE-2012 | 1 mark]

이야) Freedenich perioder oder (ab dy spormate) distributed with months of standard and all groups 1000 of au and 240 in au, respectively. The probability that the at a  $\omega_0$  prediction will  $f_\infty$ Dicellan 2000 mid

> 121 × 500% th4 50%. 131 TF 14 30 0000

> > [DE GATE-2012 THR/K]

0.61 diams  $\leftarrow p_{\rm c} \approx 20$  father thoughts as in the ha-shu Bhatagh ea erlan haad jirin teel basaadh CPM, follows fostereds, pascheding een S(M) attiving a density of observing the equipment Coardon by any given in rollanding into ya vi

ia: Spiller; 0.03425629.12(25)idi (Sintia) 788 CATG-2013, 1 Mg·k1

 $\mathbf{O}(\mathbf{G}^{n})$  find the value of  $\lambda$  -contradit matter  $\lambda_{n}(\mathbf{p})$  and  $\lambda_{n}(\mathbf{p})$ arada tilifasilə işaşı çırasının

 $\eta(z) = \frac{\lambda(z) - \frac{1}{2}(z^2 - z^2) - \frac{1}{2} \underline{\beta} \underline{\lambda} \underline{\beta} \underline{\beta}}{0} + \frac{1}{2} \underline{\beta} \underline{\lambda} \underline{\beta} \underline{\beta}} \underline{\beta}$ 

ICE, GATE-2012, 2 Mark)

Quality comit updated com satisfied by the control of the same of Shift is further J(x) = 0 for  $x \in \mathbb{R}$  . Then

**有**色点 10 点 gg 0.369

用充金数

ir! f 3:2  $(c_1, \ldots, c_n)$ 

[BE GATF-2013, 1 Mark1

Q 84 Apprilitudire is dott yn is bestûnds a probatylig.  $\mathbb{E} (\mathcal{M}^{2}(y, \tilde{y})) = 2 + 0$  of  $x \in \mathbb{N}$ . Then  $\mathcal{H}(x) \in \mathbb{N}[y]$ 

(4) 19条。

(0) U.S

· U.Saci

odi Si

JN GATE 2013 . 1 mark]

© 83 Lm Zt⊷s homic reacchive glygroth heat it. Andrea streets, the sold at my end a figur-

-) U.S.

رين أو tracel broad and less than 5.5

Other end than C.Standon with Egyptic

611.1

[Mu, GATF-2010, 1 Mark]

Q.80 A harmanikey bank has firmly harmanitally Making examining in tax-nings process in Lyay. su constituit fa rive vij. Longanus Exiget versio SATCA Cities at the Rt. (20 The percent goal). оскі і і жекіршір, ос оста мініші ў рыльсі Ауньеде. rady bolanca main it an fig. 500 p. .

[ML\_GATE-2014], 1 Mark].

 $\mathbf{Q}(\mathbf{G} A, \mathbf{A}, \mathbf{C} A, \mathbf{A})$  is a second containing  $\mathbf{A}_{\mathbf{G}}$  . For  $\mathbf{G}_{\mathbf{G}}$ Finders on and it would in the to swing extraorecul; Hawli (i) hood (ii) Hawli (iv) hood. he along the electioning of the flat property with 15 Y хэвс эсэр (с.

> 160 5 :·i \_

CF, 3ATE-2014 | LMarkII

O.58 А.с. ступшая «Теленты» ст. Вытерейную. Two parts on living drawn throtal equals in a ions a minimum by from the box. The  $\mu_{0.055}$  level  $\Gamma_{0.055}$ AATO die parts borng gevalfa-

 $at = \frac{45}{12}$ 

(ME, GATE-2014 : 1 Mark)

Q.88 A group a dividual communication may write ed mail: Of this group 20% of the men one Skigs  $\hat{\mathcal{C}}$  , we work to also be the events of the property of soletice that got menting group the probability of hit well-steel person doing a my eyed to

IME, CATE 2014 . 1 Mark"

Z 70 Allancon stressor number, the also align met. De difference da waan termuming et Falads and 200 S (2) 30 S

 $(Q_{ij}^{*}) \geq 0$ 

(E) (F)

ici ru 🦼 💳

LE, SATE-2017; 2 Marks]

Out I de les land diese with one property Meditie ambability saudient wie in dem Sinkeing die Si proposition to the element to describe which thick was sinkel to be

(FF, GATE 2011 ; 1 Malk)

[[[0] GATH/2014:1 Me/4]

Queglion and vive is one alterest an initial in imberial Given the protection by Letter build index appears. Queglian Little in

17) 0 (36)

(0.0005)

(9) 1132

g) 2021

EC GOTT-2014 1 Mark

g ye han allo gronn sent at fill a character fill bask nade your withought wo desticiting. Finch position as the characteristic little (fill mostly at the characteristic at a constitution at a constitution to the characteristic most probability that it was the character position of the character positio

強度 For landers decrees a laboration in 2005年刊会 特別では、 the results very PP 6 200290. Provide o A k

<u> [03, GATE-2014 : 8 Marks]</u>

© 76 The probability is a glada positive in —y T MOD by ween — and 100 (b) is a survey is MOT divisible to 2, 3 A to 0 ——

JOS, GATF-2014 I 2 Warks: 5H-7,

G.77 Let Sibe else moto scope en il we m.CJD M eurliphia typits Ale J Scopulch (2015年 名 所y peoples 他のpobal (ily al life overt)。e movemmes(be) ( 5.4) 代記(は 1

10S, 2014 P Marke-Sei-S]

Q.78 in the property shocks also visually density T  $_{\rm c}$  shocks from the constraint of a significant constant constant of a significant constant constant of a significant constant 
[PV1], 2014 P. Marks)

Q 75 Ambehrus problems 0, let z Jafe tvoluceus m diggela Jilaas nitroo grobalistiyet 18 20 amb promasonomyely. The moon belue and the caliance of the minimum of colastive process produced cylinau noncoma Jay inspective o

> ... (2-19-11)(5-

p. 455 and

(r) 1 ar a No

ig 5 - 98 and 463

ME\_2014 . 8 Marks]

(Мр. пать золи 18 Магча

Out 1 = withdraystems on 1 or being a proof a topological extensive shall be water out to a entry. In a calendary when for proof is a calendary with a calendary before a report of without the same of a entropy of a large shall be a small of the calendary of the

gd8, EAJE-2014 . 1 Mark<sup>\*</sup>

© 85 An able of behindered on a resemble of british of penalters of your on one of a factorial relation of the remaining of the Able occurs of the remaining of the Able occurs of the occurs of the Able occurs of the penaltee of the remaining of the Able occurs occurs on the Able occurs on the Able occurs occ

[DE] GATE-2014 : 2 Verkall

See Terrinish of accelerts containing health of the month (allow) regard decoupers are espirable propriately self-argument are espirable.
See containing a containing element.

Teur Unix

(9) 0000

[8] 6354

g ( 6768 - C.) JVV

[ME, GATF-20, 4 : 8 Mai+8]

Qualific grobed thy constraint and on a vegorishment on any explaining a year in please of each on the

$$S_{n,k} = \begin{cases} \frac{1}{k} & \text{index for my they} \\ 0 & \text{otherwise} \end{cases}$$

The product format File in pobecans also in implicate la 6 - kg in the well at a lik (in decima)...

(SF GATE-2014: I Mark)

Q.05 Louis can an improve observed produce Hyderaty Landyn

$$\label{eq:continuous} \mathcal{B}(t) = \begin{cases} 0.2 & \text{for } t \leq s \\ 0.2 & \text{for } t \leq s \leq s \\ 0, & \text{otherwise}. \end{cases}$$

For an last operation  $\mu_{ij}(x)$  and  $\mu_{ij}(x)$ 

Tabli GATF-2014 ; S Mnrvs1

Q 66 ПФ нас остига и у под разделите унгуулаа с Calinet over the injury of a party of the 555 ) which is pollinously the density for  $\sigma$  and g.fe.500.05

the value of the coupled 
$$\frac{\partial x^{-1}}{\partial x^{-1}} = e^{2 \int_{0}^{x^{-1}} dx} e^{2 \int_{0}^{x^{-1}} dx} e^{2 \int_{0}^{x^{-1}} dx}$$

- 141  $-(2) \, \mathrm{U}_{\mathrm{col}}$
- (2) ich au

-SF CATE 2014 (1 Mark)

- 0.87~% arcose  $4.5~01.5~{
  m grg}$  (we have a replication min proote like ያ(ነት a bin st ሚጫ አይ ይፈር ሊ  $S(z) \stackrel{\sim}{D} (V)$  and S(z) (remotes, Which is e.g.  $\oplus \phi$  $\delta$  being stort and  $g = \chi_{-2,-2}$ 
  - $(20.5) \wedge (2.5) = f(A_1 \cup A_2).$
  - (1) 高(森) 音楽。
  - លេខាតិសន្នាធាស្នាក្នុងស្នា
  - (a)  $|\nabla A| \sqrt{g}_1 = e^*A_1 \nabla B$ .

FEC: 34TF-2015 : 1 Mark)

- $0.86~\mathrm{Gap}\,\mathrm{thm}\,\mathrm{K}\,\mathrm{Jyr}\,\mathrm{July}$  , Signer in Legander was a identically of tributed random connected of assiia tradity Tosa in Light gra
  - $\delta(X_i i) = c_1(X_i i) = i(2)c_2(x_1 + x_1)y_1$ Someone is the representation of the set of  $\lambda_1\lambda_2 \lesssim \kappa_2$ Anoma Birlindek oğlu, ihtin  $F(\mathbf{x}, \mathbf{y}) \in \int \mathbf{x}_{1} \mathbf{x}_{2} \mathbf{x}_{3} \mathbf{y}_{3} = \int \mathbf{x}_{3} \mathbf{x}_{3} \mathbf{y}_{3} \mathbf{y}_$

[CS 2015 : 2 Marks]

QLES Phase reliable work adult a supply toward oil. (460 901 call) for all  $\Gamma_{0}$  e (expect value of  $\rho_{0}$  ), we of the rimonity is else of design bulley focusing ard 5.8 GB sing 3.5 Foot section supplies of e Fig. 90. The black condition that runted to shake expurposers supplied by the years and page Code Milloren the dusign operational engine

MF\_GATE/surbit • Mark]

© 90 indiction a⊨ it is glob on cotsing an even is  $\Delta C_{\rm S}$  . The distance of the signature, detailing the expansion  $c(t^{1})$ ୍କ୍ୟମୟ ଅଟେର ୨୦% ନାକ ହୋଲ ଓ ସ $(S_{t})$ ର କୃତ୍ୟ The imes imes . Divide parameters of the Height ration, imes i.e. orazablik, iki ino salenti gali kaj jug giye.

$$m(-\frac{1}{8}) = -2 \eta / \frac{1}{2}$$

$$|\mathbf{x}| = \frac{1}{2} \qquad \qquad |\mathbf{y}| = \frac{1}{2}$$

The probability of the probabil

[ME, GALE SE15 - 1 Mark)

33.92 Fey 190.95, A 101 S is at waity keep of Fig.s. od shiet the portenting always institute the some. Obserting, views to the  $\mathbf{x}_{ij} \in \mathrm{quant}_{ij}$  the морал Тут и la wing людата а

$$\tan \frac{b}{2} \qquad \qquad \tan \frac{1}{2}$$

$$\cot \frac{x}{10} \qquad \qquad \cot \frac{1}{1}$$

[FE GATE 2019 : 2 No. 421

0.93 Colodorfforth Airgardub (Newton, Lagy) Sign (Cloud, which we is yet a)

$$\begin{aligned} & & & & \mathcal{D}(X) = \mathbb{C} \\ & & & & \mathcal{D}(X) = \mathbb{C} \\ & & & & \mathcal{D}(X) = \mathbb{C} \\ & & & & & \mathcal{D}(X) = \mathbb{C} \\ & & & & & & \mathcal{D}(X) = \mathbb{C} \end{aligned}$$

[GE, GA) L 2015 | 1 Mark1

- යාලය (සියා rips Parts Sele vesta). To f join evidia Papa and a "ල්ලා T පැ nove probe hibrard S8. Cita o to, 164, capett outy of electroposeus regglers: Tilabrosons , ell Which one ත් ප උදහන්ද ක් පිටව
  - (4) The conducted will educated by  $\epsilon$
  - им ж стан. Він сис
  - gray gray Girmal
  - $(g) = \mu_0 x$  in integer are  $i \vdash k$  is near if

1FF, GALL 2015 : 9 Marks)

- C 95 The probability of continuing at least with 200 in the control for case 4 throws a
  - $191 \ \frac{475}{232}$
- $\emptyset \ \emptyset \ \frac{9}{644}$
- 1 h
- 195 200

TMF (GATE SC15 : 2 Mañ/s)

- (5.93 The proposition) is a kineropete for completely in transposit of the content of the proposition of the content of the proposition of the content of the present of the content o
  - . (40 (609)
- $g \in \mathcal{M}(G)$
- 25 0 27
- 101 100

<sub>БМ, (БАТЕ-2015 : 8 Маг</sub>к»)

7) 97 Telling conflict digners, in each of Linguistic animals.

$$\mathcal{L}_{\mathcal{S}}(t) = \frac{1}{4}(d + d^2t) \cdot \| (d \cdot t) \| \leq d \cdot t \leq d \cdot t$$

homes прусстологыши (varionalis <u>— .</u> |СВ, GATE-2015 : 2 Marks)

 $Q_i g g \approx \exp(d \sigma \pi) \cos(g g) e^{-g} f \cos(g r \cos g)$  for the G g g s = 0 below

$$Q_{\mathcal{A}}(x) = \frac{g_{\mathcal{A}} - g_{\mathcal{A}}(x) - \left( \left( \left( f_{\mathcal{A}}(x) \right)^{2} \right)^{2}}{\left( \left( \left( f_{\mathcal{A}}(x) \right)^{2} \right)^{2} + \left( \left( \left( f_{\mathcal{A}}(x) \right)^{2} \right)^{2} \right)^{2}} \right)$$

η ) ε μεταιουθίνα συν 되지는 193 **mo**n (4**)** 전 6 함. 19

TES, GATE/2015 : 1 Mark)

G.89 A provincial not redictly 7 green behalf Albell Albeits as a smarten consensus to be furnished; if no half is placed back into the luminary with a notice conteil the verse of about the propositify of acting one sits of homeout disease.

. HN, മാ16 - 2 Marks

Qined the probability as policional file of the action of a second or a subsection of the order stocked represently into the Philodocoma I ill floridation around a section of the immore in the inforced or the immore in the inforced.

[60, 2016 : 1 Nath]

- Out of warp in a discussion independent scents. The Moon it metals and bond the confidence of the following for the Moon of the Source of the
  - 150 O A
- 3: 71:
- :::1 214
- ( ) A.S

10E, 2018: i Na M

0.102 Da santthorotuwi g aspontest

Step 1. Tess tained now see.

Strong (1) you control to #FAT 9,1 Let Show own strong and show

Stop 0.17 distance research from ICATV, HTAUCH

and Logic Tale Systems and National Co.

Stability of symmetric  $(TA, N, (A, L^2)) \in \mathcal{M}$  and  $(TA, N, (A, L^2))$ 

The product of white culture throughout the transfer  $-\frac{1}{2}$  (above less than the culture  $-\frac{1}{2}$ 

109-2015 (2 Mare)

Quide Bugge en inministrat il de society en imperior.

I Purpose a devocatoren leges interprédabilité
un annual pour la constitue à la constitue de la constit

108, spre : 1 Malki

- G. (64)  $1 \mapsto \text{cords} \ w \in \mathbb{R} \ \text{cord}^{-1} \ x \in \mathbb{R} \ \text{proc}^{-1} \ x \in \mathbb{R} \ \text{proc}^{-1} \ x \in \mathbb{R} \ \text{cords} \ x \in \mathbb{R$ 
  - $\varphi \in \frac{\partial L}{\partial x_i}_{\partial x_i}$
- $(a) = \frac{8 \underline{a}}{2 \sqrt{2 a}}$
- ::1 ::1
- 11; <del>133</del>75

[MF 2010 : 2 Marks:

- $Q_{\rm c}$  1005 Paper III show in Expect each technique.
  - (8) Proposition of the full hypothesis of endiis upon this wild point size.
  - (() теребол об не пол туробний жири (пів. Постало она I) Бе вередні I
  - (v) repetitor of the multiplic legg when this uses the first discussion +1.
  - (c) considere of the notifyed was envised to support the page of the page o

(CE 2018: 1 Mark)

Q 105 The sponsored (expression in unit) phasely a charter's education 55, 37, 46, 46, 57, 51, 53, CO, 18, 4 F178, The market special place to expedi this hard, 19, \_\_\_\_\_\_\_.

thorace is secretar as executal analysis. [Co. 2018 • 1 Mark]

Q 107 for (ii) and  $\phi$  (ii) keep two probability (4.05 to 700 cms.

$$\frac{1}{6} \frac{1}{6} = -324 + 6$$

$$\frac{1}{6} = -32$$

- Which are at the lookuping startal entered as:
- Vevil of distance give the convention of the property.
   An and distance some
- (ii) Mount (v) see quiter issue varance : fotonalistique differen
- ict Mannal (i) (a. d.go.) Haifferent en snegal (i) a. d.g.(.) de gan e
- (a) Mean of fix and our one of cront, to a ways of fight a contain of field t

[CI, SC16 P Medical

G. 106 The archalt Hydrothe an expectation in ellipse company production ellipse to the analysis yield softens in production is also go to leave endigned a Querier to control in ellipse that in the industrial analysis of control ellipse that are productions in the control of grant to a 
IMF 2016 : 2 Marks]

Q.108 the section maners of a Pireophidistre to for an invariable is PIT in hear or the range in warrants is \_\_\_\_\_\_\_

[150, 2016] | | Moral

Q 110 Donair et a Poisson distribution for the lessing Alice i-sep committé neve de translating les 8 y : l'obtanta di sevia, enfectina risa bution 5 quantity

ict u 184 <mark>1</mark> [MF, 2018 : | Mark]

Quit 1 A a bach illy gene forunction delle illegration []
Register act 18 hand buts on this interval less secret (the lumb) miskers in down west's o\_\_\_\_\_\_
[C3, 2016 in Mark]

2.112 for import valtable and in product was a second of the second of t

$$f_{2}\sin \beta = \frac{(r-\beta)}{3} \frac{\cos 2\beta}{\sin 2\beta} + \frac{\cos 2\beta}{\sin 2\beta}$$
The constant of Eq. (

The probability  $P(X \in \mathcal{G}_{\Delta_{i}}) \cap \mathcal{G}_{\Delta_{i}}$ 

[F0, 2016 | 2 Marks]

IQ 110 includity as unity to client divine the execution Also weather to

$$\frac{d(a)}{d(a)} = \frac{\begin{vmatrix} 0.85 & 0.14 & 0.24 \\ 0.1 & 0.14 & 0.15 & 0.15 & 0.15 & 0.14 \end{vmatrix}}{d(a)} = \frac{1}{5}$$

$$16(1 + \frac{1}{5}) = \frac{1}{5}$$

[CC, 2016 : 7 Meg kg\*

**Q.** if 41 a the proporty constitutions are the conclusion by the graph of

$$f(x) = \frac{3}{2} \theta^{-2\alpha} \mathbf{L}(x) - 4 e^{\alpha x} A(-x)$$

We'dle ((v) is the that store Amption, in condition 99°40 MeV and Theo (Also Corresponded) are:

$$\phi_{1} = \frac{1}{2}$$
  $\phi_{1} = 4\frac{1}{6}$ 

(c) 
$$2\frac{1}{4}$$
 (c)  $z = \frac{1}{2}$ 

TEE, 2016 : 2 Verks |

[MF] 2018: (Main)

Q [18] we mains are tested with thereously <sup>™</sup> = gratio (thy) tree evolves in a point according electric control of the file.

[NF,  $3A \pm 2017 \cdot 1.1 \text{ Ms/k}]$ 

Q.117 A completel 15 ( six 13 no rollegor 1, 15 17 +7, 18 19, 5 5, 5 7 8 0 00, 17 3, 7 9 n 555 of the data is

514 515 517 (3)2

ME GATE-2017 1 Mark)

Q 118 A 5 % to be Villaim to to be a sequent mode of the composition of

ME GATE-2017 | 1 Yark]

Complete unto that more that is provided that system is a firm output light to a minute of place to a firm output light to a minute of place to a firm output that is a firm of the minute of the minute of the minute of the minute output light managers of the minute output light managers of the minute output light minute output light output output light minute outpu

100, GATE-2017 : 1 Merk)

2 120 An emportant billed sistematic provisioning in the result of several provisioning and one of several provisions and provisions are expected to the several provisions and provisions of the several provisions.

 $\frac{60 \cdot \frac{1}{2}}{5} = \frac{60 \cdot \frac{1}{2}}{5}$   $\frac{50 \cdot \frac{5}{5}}{5} = \frac{6}{5}$   $\text{ref. 3.6 } \leq 2017 \leq \text{Mars}.$ 

Out 21 To la vitom york) that has be described to the first but on the dependence for \$1.50 that are the control of \$1.50 that

[CS] GALE 2217  $\pm 2$  Ma kaj

Utiliza A contactor painters to pues it a control as pend (ii) and is in the first of it attracted to the first of the following sector in a control of the following sector is a control of the first of the control of the first of the provent of the accident of the provent of a control accident of the provent of a control accident of the provent of the accident 
[GR. GA)[I-2017 : 1 Mark]

Quige Toxile, may indicate the weak the suppose sixth and Southward County list of conceptions with

 $\{g_{ij}^{(i)}(x_{SP,ij}, z)\} = -i (d \hat{\alpha} - 2\pi d \hat{\alpha})$ 

 $(g) > \mu(g)$  (1) 1 959 5

[DR, GAIE-2017 . I Mark]

Q=24 Fit The tangle of (a) = 2 , (b) = 0 and (b) = 0 for all (b) = 0 for the problem of (a) = 0 for all (a) = 0 for (a) = 0.

 $\chi_{0}(g) = 1, \ \alpha = 2$  (15.5 ± 9.5) of

(a) 4 (b) 5 (c) 7 
## Answers Probability and Statistics

$$\frac{248}{37}, \frac{13}{19}, \frac{239}{39}, \frac{139}{39}, \frac{36}{39}, \frac{24}{24}, \frac{139}{39}, \frac{36}{39}, \frac{36}$$

$$37.~(4)$$
  $26.~(2)$   $39.~(2)$   $40.~(4)$   $41.~(6)$   $42.~(2)$   $48.~(5)$   $24.~(6)$   $25.~(6)$   $49.~(6)$   $47.~(6)$   $49.~(6)$   $48.~(6)$   $60.~(6)$   $51.~(6)$   $52.~(6)$   $52.~(6)$   $54.~(6)$ 

55. (5) 
$$56$$
  $(6)$   $67.$   $(6)$   $50.$  (d)  $69$   $(6)$   $60.$   $(6)$   $91.$   $(6)$   $63.$   $(6)$   $66.$   $(6)$ 

$$104 \, (9) \, (105, 19) \, (107, 16) \, (119, 12) \, (15, 18) \, (114, 16) \, (117, 10) \, (123, 10) \, (129, 16)$$

184 (f)

### Explanations Probability and Statistics

#### $\mathbf{L} = (\mathbf{c})$

Bit. Works an independent

$$M_{\star}(\widetilde{\Omega}_{i}^{2})^{*}$$
 of  $i \in \mathcal{D}$ 

$$\begin{split} & \frac{P(A)(B)}{P(B)} = \frac{P(A)(B)}{P(B)} = \frac{1/2}{1/2} \ , \ , \\ & \frac{P(B)(B)}{P(B)} = \frac{P(A)(B)}{P(B)} = \frac{1/2}{1} \ , \ , \ , \ , \ \end{split}$$

#### 2. (c)

This profile in its to be seen by binomial this better, since although population x in the second profile profile containing the containing from the x

$$z = 0$$
 (i.e. defective)

$$\varphi = \lambda(t+b) \log t = \frac{2\pi}{2\pi}$$

$$G_{M_1}(\varphi) = 2\beta + 2\beta + 2\beta \left(\frac{1}{2} \frac{g^2}{g}\right)^{\frac{1}{2}} \left(\frac{1}{2} \frac{g^2}{g}\right)^{\frac{1}{2}}$$

$$G_{M_2}(\varphi) = 2\beta$$

### 8 (d)

$$\frac{1}{10} \times \frac{4}{6} = \frac{9}{9}$$

Automotively this problem can the congress to personner in Expirution since have up instructive accument to the few population. Here is taken was ram,

$$m(0) = 20 = \frac{100}{10000}, \qquad \qquad 50$$

$$= \frac{3}{10000}, \frac{1}{2}$$

$$= \frac{3}{10000}, \frac{1}{2}$$

$$= \frac{2}{10000}, \frac{1}{2}$$

#### 4. (a)

In the true tendr to the tend we enjoy mediate to compare the Lyu and year detail in  $y \equiv y$  . Let  $y \in S(A)$  be converged at the particle particle state.

$$\begin{split} g(t) &= \int_{\mathbb{R}} f(x,y) \, dx = \int_{\mathbb{R}} f(x,t-x) dt \\ &= \int_{\mathbb{R}} f(x) \, f(x,y-x) dt \end{split}$$

while its also called the convolution of  $r_{\rm conv}$  (§) of the stated as  $r_{\rm conv}$ . Convolution one rethropton and the (a)

#### э.

§jry e z'n nich gares ardi indede i le ti اللحمة | gaze | Arabija a ayılı ورويع

- (التالة مامرة معرض عامر أي ا
- 5(gpt5 2) x 1(g4 ↔ 3).
- and Stand Utallin iso enabling.
- \_ 12 × 0.2 + 0.04

#### €. idi

друж прику-Aven ac por buestion de a ration 0.

$$\left| \frac{\zeta}{\mu(X^{n-1})} \right|^{2} \left| \frac{0.28}{3.74} \right|$$

espector marks by 1918-100

$$-12(x) = 2.8 + (2)$$

$$-1.48411028 \times 34$$

$$\pm mc = 3/16 \pm 17/0~\mathrm{mas}~cs$$

Schol market corps  $g \mapsto 16 \times 150 \text{ at appoint}$ 

= 
$$\frac{1}{n^2} \times t \mathcal{A}$$
 .  $\frac{2n}{n}$  makes periodicity t

$$=\frac{\sqrt{6}}{3}(\mathbf{y}, (0, \mathbf{y}) \pm 0.878)$$
 matrix.

Ogranie: Isowerwyd).

#### ia:

The condition dolling Alies Is and Pilato Sissue. as gouing east in Pilmons out or Curries.

Apprysog that a mula for only risk. Its. Its flow, we

$$\begin{split} P_{0}(x-x) &= -D_{0}(x/2)^{2} \left[ 1 - \frac{1}{2} \right]^{\frac{2}{3} - \frac{1}{3}} \\ &= -2D_{0}(x/2)^{\frac{1}{3}} \left[ (\sqrt{2})^{\frac{1}{3}} - \frac{1}{2^{\frac{1}{3}}} - \frac{3}{2^{\frac{1}{3}}} - \frac{3}{2^{\frac{1}{3}}} - \frac{2}{2^{\frac{1}{3}}} \right] \end{split}$$

#### 6. (3)

ዛችs mm ng biologop belwee ለውን እንደሚከርና ነር give and swing that occurring trade to be a leadesc  $\mu_{\rm c}$  covers the contractors that the following differential gg Jilwiw . Isharya metrebulah w<sup>ala</sup> di delahardi សូស្ត្រក្នុងសម្រាក់ ការពីការសភាព ស្គេចនៃមានរក់ការ

$$z_0 = 274 \pm 52$$

 $d_{\mathrm{SP}}(y,y) \in \mathbb{N} \setminus \{1,1,2,3\}$  . So that the  $d_{\mathrm{SP}}(y,y) \in \mathbb{N} \setminus \{1,0\}$  $\phi_{i}$  ,  $\phi_{i}$  only we althought  $\phi_{i}$  ,  $\phi_{i}$  and  $\phi_{i}$  . Store such each

$$\sin_{\theta} p(\theta) = p(1 + f(\theta_{g})^{2})^{2} (f(\theta)^{2}) \cdot f(\theta)^{-\alpha} = \frac{|\partial u|}{2^{\alpha}}$$

Carrellinha calistrordore (s).

#### Ø

programs can be selved by expendentially grow bulgating with 1895.

$$|x(X - Z)| = \frac{1}{12 \sum_{i \in X_{i+1}}^{N_{i+1}} \frac{w_{i+1}}{12 \sum_{i \in X_{i+1}}^{N_{i+1}} \frac{w_{i+1}}{2} + \frac{w_{i+1}}{2} \sum_{i \in X_{i+1}}^{N_{i+1}} \frac{w_{i+1}}{2} + \frac{w_{i+1}}{2} \sum_{i \in X_{i+1}}^{N_{i+1}} \frac{w_{i+1}}{2} = \frac{w_{$$

#### ٠١٠. (0)

⇒ y Lorpositor ∞ecto ∞ (6H) コステップ・ゲ

Yaka warat yare unjia my Sarta,**res** ∪ ≦a ≦ 1

(19) satisfy Somery function for 
$$\frac{1}{4 + 0} = 1$$

Fix orbitive details of the ST  $Y = \frac{1}{9 - 2} e^{-1/2}$ 

$$\begin{aligned} H(x^2) &= \frac{\frac{1}{3} \sqrt{(x^2 + 1)} \sqrt{x}}{\frac{1}{3} \sqrt{(x^2 + 1)} \sqrt{x}} \\ &= \frac{2^{\frac{3}{3} + 1}}{\frac{1}{3} \sqrt{(x^2 + 1)} \sqrt{x}} + \frac{1}{3} \frac{2^{\frac{3}{3} + 1} \sqrt{x}}{\frac{1}{3} \sqrt{(x^2 + 1)} \sqrt{x}} + \frac{1}{3} \sqrt{\frac{x^2 + 1}{3} \sqrt{x}} + \frac{1}{3} \sqrt{x}} + \frac{1}{3} \sqrt{\frac{x^2 + 1}{3} \sqrt{x}} + \frac{1}{3} \sqrt{x}} + \frac{1}{3} \sqrt{x}  + \frac{1}{3} \sqrt{x} + \frac{1}{3}$$

#### (d)

 $\{g_{i,j}\}_{i=0}^{n}$   $g_{i+1}$  is a  $a_{i+1}$  and  $a_{i+1}$  and  $a_{i+1}$  in Proposition (  $g_2(\mathbb{R} \times \mathbb{C}) = \operatorname{confit}^* g_2(\mathbb{C}).$ 

grig machinel be zoro.

(v) x ∀ 20 6 not.

$$-\mu_{i}(F_{i}, \gamma_{i}) = \mu_{i}(F_{i} + \alpha_{i}(i) - \alpha_{i}(i) \cap A_{i}^{*})$$

$$\leq \mu(E_{\rm c}, S) \leq \omega(C_{\rm c}, \rho(S))$$

Silvi Madistrati Calej errodropiano in univily the little are unrefered aggregates. gdi ia Intal

$$= -9.676200 \times 10^{2}$$

$$= 2\ell(r\cap C) + p(\ell)$$

12 (1)

$$\sqrt{3} = \frac{3}{5} = \frac{1}{5}$$

$$|x| = \frac{x}{2}$$

a fine point as a regard needed about  $\mathcal{A}_{\text{eff}}$  of part  $\mathcal{A}_{\text{eff}}$ 

$$\frac{\sigma}{2} = \frac{1}{2} > \frac{1}{2} = \frac{1}{4}$$

13. (a)

San de apera 💎 gor Liggi

lola wegan whomeumit wither you gig 18 30 T. 前 60 E. 网, 真 (1 表) 2., 25, (7 水 g)

 $20.33, J_0 = 8.99 \gamma_{\rm eff}$ 

1/2 stating problem of  $x \in \mathbb{R}$  by  $y = \frac{h}{80} = \frac{1}{2}$ 

We see the widthy  $\sigma^{*}$  in the particle  $\sigma^{*}$  is  $\sigma^{*}$ - - 3

Enset about the description of the Fig. 1.1.1.

Sequence probability = 
$$\frac{3}{4} = \frac{\pi}{2}$$

16 (8)

 $6.5 \le 840$  for the form p , where the contract pES(Alizely skywedida Thillyn i medd y meitari э досо

19 (50)

If is problem of the periods in  $\gamma_{ij}$  binomial problem to since capital units in jugg.

Pollability or deleting you got

resold by simply velocity  $si \rightarrow$ 

$$\beta=\beta+\rho_0=1-\rho_0=0.0$$

Presenting that a costly Anti-Traishesen makes es detective.

$$=\frac{12}{3} \frac{(1/2)^2 (4)^2}{(1/2)^4} \frac{(4)^4}{(1/2)^4} \frac{(4)^4}{(4)^4} \frac{(4)^4}{($$

M. ger

i for sittle can in the proceed the firms you writer. alla randoni verlattis 24 🖨

$$p(q) \leftarrow \sigma(1) = p(q \leq \chi \leq \theta) = \int\limits_0^1 f(x) \, dx$$

16. (d):

(4) is to colored 1 # 5 (3 she i) coporador.

$$(1-\nu_{2}(1,\beta))=\operatorname{ht}(s_{1}(s_{1}),\operatorname{on}(s))$$

which book are saver-

(a) is levelar co

$$\Omega(\mathcal{P}_{\mathcal{F}}(S) \cap \mathcal{D}_{\mathcal{F}}(S) \cap \mathcal{D}(S) \cap \mathbf{M}(\mathcal{P}_{\mathcal{F}}(S))$$

 $\dots$  (1)(10) Of  $\Delta$  (5)(4) = (14)(1)

 $M_{\rm c}$  is 10.60 at the interpretation on the liquid eddic ware unconstructed, ed.

çdir. simulə

$$\Rightarrow A(C \cap Q) \le q(x).$$

: buth sides by 4,5% we up,

$$2^{11} \cdot (2) = 35^{\circ}$$

$$= \operatorname{Im}(P \cap G) \le \operatorname{Im}(\overline{P})$$

19. (a)

$$i=\frac{1}{2J}\frac{1}{k}\int_{0}^{J-(k)/J}g_{k}$$

⊇• perma = tt

$$\frac{1}{\sqrt{2}\epsilon_{\alpha\beta}} \sum_{i=0}^{n} \frac{1}{\epsilon_{\alpha\beta}^{(\alpha\beta)}} |\psi_{\alpha}\rangle = \epsilon_{\alpha\beta}^{(\alpha\beta)}$$

We control particles and this y

ժեր խարգ . − ն

$$\frac{2}{5}\frac{1}{8000} s^{-3/2} = \epsilon$$

hew butters of Filingh resecution, we pro-

$$x = \frac{\pi}{\sqrt{2\pi}} \left( \frac{1}{6} - 1 \right)$$

2F: 5:3

> Liber fair disces and rolles the processing dath for firm exhibites in the conyect or pastick algebra ligh

$$\frac{\gamma - \frac{1}{2}}{p_{\rm eff}^{2}} = \frac{\beta - 1}{4} + \frac{\beta - \frac{1}{2}}{2} + \frac{\frac{1}{2} - \frac{1}{2} - \frac{1}{2}}{2} + \frac{\beta - 17}{4} + \frac{1}{2} + \frac{1}{26}}{\frac{1}{2}} + \frac{1}{26} + \frac{1}$$

 $100~{
m kpc}$  -yellochanish a m color pc  $^{-1} \sim 0.01$ diliyen waya modaring weetka la 1916 kat general in our one can be distinct by (1.1). (5,54, (3,2) and (1,1)

$$y = p(y - y) = 469$$

руж үүү эв экспетсис (а)

$$O((c_2,6)=59,\pm 4)$$

$$\frac{S}{SS} + \frac{2}{99} \times \frac{2}{98} \times \frac{2}{98} + \frac{2}{98} \times \frac{2}{98} + \frac{2}{29} = \frac{2}{28} = \frac{7}{4}.$$

 $\rho_{\rm c}$  a horizon (g)  $(r_{\rm c})$  (  $r_{\rm c}$  > 5) = 1/0 > 2000 > 2

uchside and (51).

 $O(\gamma/3)(\sqrt{3}+p\log p_0)=O((2-2)+pr((2-1))+pr(2-1)$ 

$$D(-|\pi t\rangle = 12)$$

$$-\frac{2}{50} + \frac{5}{93} + \frac{4}{36} + \frac{1}{36} + \frac{12}{50} + \frac{7}{9}$$

 $\sim 10^{10} {\rm GeV}^2$  (a) is also such the general 5.6 in the step. Çiyi Kası ohalca (b)

$$\rho_i(r+8) \mid \rho_i(t) \varphi_{\Delta_i}(t) \mid \Phi(j+t) = \frac{1}{2C}$$

 $\mathbb{E}_{\Xi(t_0, Q)}(\phi(t) \otimes \pi_1(t) \circ (cn + at/c + c) + at(1 + \delta) = \delta(1 + at/c + c) + at(1 + \delta) = \delta(1 + at/c + c) + at(1 + at/c + c) = \delta(1 + at/c + c) + at(1 + at/c + c) = \delta(1 +$ 2007 - 120

$$\frac{s}{s} + \frac{5}{20} + \frac{5}{20} - \frac{s}{26} = \frac{1}{26}$$

 $gr(z) = g \sin z / 4$  is an integral  $z = c \cdot (z - R) + \frac{2}{23}$ 

 $\frac{d}{d} = \frac{\partial S}{\partial x} = \frac{\partial$ Chaine (a) is conrect.

#### 21 (4)

 $X = \sup_{x \in \mathcal{X}} y_x y_x x^x + i \operatorname{mod} kx^x$ 

Prysiki Afra in tri ne domouter wak 9 po lodioviy. Higging your Richard Vo.

$$\begin{aligned} \partial_t \mathbf{e}(t) &= \frac{\partial(\mathbf{e}(t))}{\partial t}, \\ \partial_t \mathbf{e}(t) &= 0.5 \times 0.03 + 0.006 \\ \partial_t \mathbf{e}(t) &= 0.5 \times 0.1 + 0.0 \times 0.02 + 0.1 \times 0.03 \\ &= 0.005 \\ \partial_t \mathbf{e}(t) &= \frac{0.006}{0.006} = 0.4 \end{aligned}$$

#### 95. (d)

The probability of dictary, wheelprobabilities.

$$\begin{aligned} & -2f(t_0) \left( \frac{1}{2} \frac{2f(t_0)}{1} \frac{1}{2} \frac{1}{2$$

#### 92 (L)

 $\mathbf{r}_{1}$  , we propose the finite induction  $\mathbf{r}_{2}$  and  $\mathbf{r}_{3}$ otati bulioni is eroji 1646 (di.

$$p_{ij}$$
) defective in  $\theta$  on our action  $=\frac{2D_{ij} \times 2D_{ij}}{2dU_{ij}} = \frac{1}{2}$ .

#### 24. id:

Problem Lead on solved by Trynamics of atka hurce.

$$\frac{100}{(5)} = \frac{100}{(5)} \times \frac{100}{(5)} = \frac{8}{200} = \frac{3}{300} \times \frac{3}{300} = \frac{100}{100}$$
(7a)

(a) 
$$\begin{aligned} & \text{Mean} & = \mathbf{n}_1 - \mathbf{f}(\xi) + \frac{1}{2}\mathbf{n}_1 \mathbf{f}(\xi) \cdot \mathbf{g}(\xi) \cdot \mathbf{f} = 0 \text{ (off)} \\ & = \frac{1}{2}\mathbf{g}(1 + \mathbf{f}(\mathbf{n}_1^2 - \mathbf{f}(\xi) - \mathbf{g}(\xi)) \cdot \mathbf{g} + \frac{1}{2}\mathbf{g}(\xi) \cdot \mathbf{g}(\xi) \cdot \mathbf{g} + \frac{1}{2}\mathbf{g}(\xi) \cdot \mathbf{g}(\xi) \cdot \mathbf{g}($$

$$\int_{0}^{\infty} d^{2} \eta dq = g(\hat{y} - \frac{1}{2})^{2} \eta dq$$

$$\begin{split} & = \int_{0}^{\frac{1}{2}} d^{2} (1 + i) \phi t = \int_{0}^{\frac{1}{2}} (1 + i) \phi t \\ & = \int_{0}^{\frac{1}{2}} \left( \frac{1}{2} - i \right) dt + \int_{0}^{\frac{1}{2}} (1 + i) \phi t \\ & = \left[ \frac{\partial}{\partial t} + \frac{\partial}{\partial t} \right]_{0}^{\frac{1}{2}} = \frac{\partial}{\partial t} + \frac{\partial}{\partial t} \\ & = \frac{1}{2} + \frac{1}{2} - \frac{\partial}{\partial t} \\ & = \frac{1}{\sqrt{2}} + \frac{1}{2} - \frac{\partial}{\partial t} \\ & = \frac{1}{\sqrt{2}} + \frac{1}{2} - \frac{1}{2} \end{split}$$
 Shortfollowing with

26 -301

$$\int_{0}^{C} h(s) \, ds =$$

$$\int_{0}^{C} h(s) \, ds$$

#### 27. (d)

Hill from a consumport sevial ranging of station in the price of the contrag responsibility and the mean and stander of leviluanity on the  $d_{\mathrm{CS}}$  CHT2, volumes is the endings of  $\mathrm{Log}_{\mathrm{S}}$ NAMESON AND SECTION

$$r_0^2 = 20$$
 $r_0^2 = 0.5$ 
 $r_0^2 = 0.5$ 

In order to now wise parent shown the prosection потто Вескортока виз види издражение.

Figure 2 = 
$$\frac{2 - 0}{n} = \frac{2 - 5.5}{1.5}$$
  
=  $\frac{1. - 0.1}{5.0} = \frac{2.5}{1.0} \frac{6.5}{1.0}$ 

Equating in ever less that so very, we get

#### 26 /ci

Number of permittablish kmit, 12 graph, I got a larger

human of genulations offer to THE ECCONAL position  $= 10 \times 10^{11}$ 

(Tithe Asseptable History of Ltd. Codifion Tiers) en do stinutos e la leda concesión de entre en POMARINE Juli Bersin 18 (etc.)

furnished by measures with  $\Omega$  in  $\Omega$  , we give  $\phi$ 19 N 9 2 17

 $00 + e^{i p x} 2 \pi a a a x M + 2 e^{i p y} 10 c c c n more si$ олбин Берагалия Тражжийныгалгу La ruman - A

and color in  $1.2^{\circ} \times \eta + \beta^{\circ}$  state, where  $g_{1,1,1,2}$ ■4 possible to fallsty lie given condition of ke TOP: His only 10 **odd nu**mberk was jobiom (j. parate the purise the dealers in umber of ascricibilismo eficilica, si estre given e indiger

 $91 - 10 \approx 100$  $-0.85 \times 171 \pm 10.28$  data life  $\pm$ .... O s. 91

haw the probability of this has action by is given by

$$\frac{2^{1}-10 \times 10^{-1}}{20^{1}} = \frac{10 \times 10 \times 17}{20^{1}} = -10 \times 9$$

éladi kisacany prokamina da) ibi orijen 👝 Afawa kidi erebihesa.

29 :c:

$$\frac{\text{Dominto, c. 1}}{\text{Postability}} = \frac{1}{4} \begin{bmatrix} \frac{2}{3} & 2 & 4 \\ \frac{1}{3} & 1 & \frac{1}{3} \\ 3 & 3 & \frac{1}{9} \end{bmatrix} \frac{3}{6} \begin{bmatrix} \frac{1}{3} \\ \frac{1}{3} \end{bmatrix} \frac{2}{5}$$

6 f 49 fre viso are independe

$$1.5^{\circ} \cdot 5^{\circ} \cdot 5^{\circ} = \frac{1}{4} \times \frac{1}{6} \cdot \frac{1}{4} = \frac{1}{108}$$

83. fei

t files to eliminate af militig in pager fa 1915) செல்லான் பெரு என்னு இ Civon, F(k) = 0.6 .  $-0.00 \pm 0.20$  $\tilde{G}(G(\omega) = 0.6)$ 

Forkely live of talling in Levil

$$F(A \cap B) = O(a) \cdot a(A \mid B)$$
  
= 0.2 \(\cdot 0.8 \cdot 0.10\)

3-(6)

$$GF = \frac{\pi}{2} + \frac{3 \, \phi}{23} + 0.56 \chi \chi$$

#### 32. (d)

ransilve (riji) ans ransilve. Kajinio to

-i 1 F.

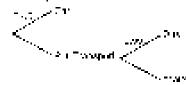
$$f(\lambda^{n}) \leq (-2(\lambda^{n}) + f^{(n)})$$

Burlonge X shall national bolds.

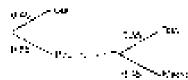
$$\begin{array}{c} H(X') \neq [ ( \mathbb{Z} X ) ]^2 \\ := G(X') \cdot S^2 + H(X') \cdot \mathbb{D}(X') \\ \neq (H(X)] \cdot L \cdot L \cdot L^2 \end{array}$$

#### 33 (m)

The importation algebra that product local density in roset teorny for the prisonal suggests before:



he we amountly the Lightenian to above the Here has a the mand show monotoned the manda of the manda of the control of the con



Promotovytieje i

$$y = y(0, y) + 0.40$$

### 24 (6)

Lor & Jervie computes objects a left and Mily-lines with succy. The find diagram for the procedure by the procedure by perejudoction diagram, which:



Night you contain trades by we into up indiversely mention and pattines as earlies show that we pay then it may and Crambal the days in pay Crambalows (Crambal section 4.1 Crambal)

 $= p_{ij} C$  on interesty C or R except and C R we discuss the  $p_{ij} C$  of monday R R in the victy and C operation R R R

#### 88. (a)

Binding gighter an talged lank—in a arotter invalves cone.

$$p = p_{A} f = 1.5$$

 $A_{\text{PODAL}}(i,j,k) \cdot j e^{-ikx}$  is now, each the Binnion is  $a(x) = a(1-2C) \cdot j \cdot (2a(1-2C))$ 

### 36. (M)

 $\frac{\partial p_{i}}{\partial p_{i}} = \frac{\partial p_{i}}{\partial p_{i}}$ 

$$\begin{aligned} \mathbf{g} \left[ -\frac{1}{2} \mathbf{g}_{11} + \frac{1}{2} \right] &= -\frac{1}{2} \mathbf{g}_{12} + \frac{1}{2} \mathbf{g}_{13} + \frac{1}{2} \mathbf{g}_{14} $

(reproduction expressed operation)

$$g(1, \frac{3}{8\pi}) \times 100 = 1.5378 = 3.473$$

### 37. (4)

Given  $\mathbf{u}_{N} = (\mathbf{u}_{N} - \mathbf{v}_{N}) + \mathbf{v}_{N} + (\mathbf{v}_{N} - \mathbf{v}_{N})$ Adopting the figure and exist (V-rown)

2749 ×

$$\rho(X^{2}) = Y - \kappa Q(X^{2}X^{2})$$

Concernigio di sicada e non el terrores,

$$\begin{split} & n \bigg( 2 \, \alpha^{-1} \frac{1}{\sigma_k} \bigg) = n \bigg( - \alpha^{-1} \frac{d_k}{\sigma_k} \bigg) \\ & + \left( 2 \, \alpha^{-1} \frac{1}{\sigma_k} \right) = \frac{n^2}{\sigma_k} \frac{2 + (-1)^n}{\sigma_k} \\ & + \left( 2 \, \alpha^{-1} \frac{1}{\sigma_k} \right) = \frac{n^2}{\sigma_k} \frac{2 + (-1)^n}{\sigma_k} \\ & + \left( 2 \, \alpha^{-1} \frac{1}{\sigma_k} \right) = \frac{n^2}{\sigma_k} \frac{2 + (-1)^n}{\sigma_k} \end{split}$$

Now since its crow that it stonourd now struction at

$$y_{0} < 0 \le y(1 \times 1)$$
 ... (1)

Charponing (Tights (Tilled Cartises) (Al-

$$\frac{3}{m} = 1 \Rightarrow m = 2$$

### 90 (d

(c) contracted, we have the heads:  $f(z) \in \mathbb{R}^{n}$  ,  $f(z) \in \mathbb{R}^{n}$ 

New, soon lose is a rependent.

Si reputated properably:

$$= \frac{1}{2} \left( \frac{1}{2} \right) {1} \right) \right)} \right) \right)} \right) \right)} \right) \right) \right)}$$

#### 50 $\{g\}$

 $h > g(\log n) \log n$ 

Note that e.g. — ≌a.a. 1.

$$1 - O(2000) + O(6000) =$$

 $2^{\frac{1}{2}} \leq 2(260.00 \pm 0.000 + p_0) + c_0 p_0 =$ 

$$V(sec) = \frac{1}{10} + 0.58.9$$

ћем. Подрен изаказата гон Тарог затин

$$-392.1 = 694 \times 1006$$

NAMES THE RESPONDED TO (1 + (3))

$$\mathbb{P}(\Delta) = \mathcal{O}(-1+\gamma,3)$$

$$\varphi(x) = \chi(4) + \chi(3) = \frac{1}{3}$$

$$Q(\mathbb{D}(\mathbb{R}^n)) = \frac{2}{\pi} \left( (0.000(\mathbb{R}^n) + 0.000) \right)$$

. Signor La

$$|20000| \cdot |309| > 30 - 6.79$$

$$\Rightarrow \frac{2(5\cos^{10}\log 4 + 2)}{3(3\cos 4)} = 0.75$$

$$\Rightarrow \frac{6[\text{lab}(t-4]\theta)}{2(1+\alpha)} = 1.72$$

$$-1 \qquad \text{p-fiscos}(A) = \frac{P([acc] - 16)}{|C| 7},$$

$$= \frac{a(4) - b(3)}{|C| A},$$

$$= \frac{0.1754 - 0.1764}{|C| 43}$$

#### 40 'a !

Big countaines (  $a_{\pm}$ ) in  $\{ \| p \|$ 

Begined presenting  $\pm \frac{1}{2}$ 

#### 41

Further distribution is used the  $\omega$  dispersion on Following copys.

$$p = 10000 - 125$$

fit for 
$$p(1, 2, 1) = 4 + p(y) = 0$$
  

$$= 1 + p(y) \left[ \frac{1}{2} \frac{x^2}{2} + \frac{x^2}{2} \right]^2 + \frac{1}{2} \frac{x^2}{2} + \frac{x^2}{2} = \frac{x^2}{2} + \frac{x^2}{2} = \frac{x^2}{2} + \frac{x^2}{2} + \frac{x^2}{2} = \frac{x^2}{2} + \frac{x^2}{2} + \frac{x^2}{2} = \frac{x^$$

$$\sigma = \sqrt{\frac{(\sigma + \sigma)^2}{12}} = \sqrt{\frac{1}{9}(1 + \frac{3}{2})^2} = \frac{1}{\sqrt{15}}$$

$$\begin{split} &\rho(20/2\times2,000) = \frac{10^{10} S^{1/102} \log z_{p,N}}{87} \frac{1009 - 102}{27} \\ &= \mathcal{P}(0,10) \log_p 20_f \end{split}$$

In slame is all year because

no abode karea miabov sliej maig

 $= 35 - 0.85 \cdot 3 \pm 0.1055 \pm 18.694$ Phaysianswa wife regu

### 44. jej

Box is a set of 2 wassers,  $3 \pm 0.5$  and  $4 \pm 0.5$  $p(\omega)$  = a stream. Then  $\omega$  is an  $(-1)^{2}$   $(-1)^{2}$   $(-1)^{2}$   $(-1)^{2}$ 

$$= -\frac{\left(\frac{4}{3} \times \frac{1}{3}\right) \left(\left(\frac{3}{3} \times \frac{3}{3} \times \frac{1}{5}\right) x \left(\frac{4}{3} \times \frac{9}{9} + \frac{2}{2} \times \frac{19}{1}\right) + \frac{1}{19 \times 9}\right)}{19 \times 10^{11}}$$

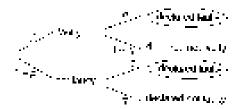
cill is more julicing a

ा हो। शास्त्रप्रीताला is ettigr

otlawii ei

$$=\frac{\alpha \log \operatorname{othrown}(\operatorname{Hierod})}{\beta(\operatorname{insertod})} + \frac{\frac{2}{7} \times \frac{3}{6}}{7} = \frac{\frac{3}{6}}{6} = \frac{3}{2}$$

#### 46. (3)



halma diagrampi orchaffi exissilizari abose. From a continuo il yrote of ten il menyi (y pfined world faults) =  $p_{ij} \cdot (1 - g_{ij}) = p_{ij}$ 

### 47. (5)

Comits research times

Director (Leady prombord vise

- 三点的,在它们实现的各种。

$$= \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \right) \right) + \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \right) \right) \right) + \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \right) \right) + \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \right) \right) + \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2}$$

48. 19%

The for street are (1.1, 0.4, 5)

Sample space up 1, 4 is 20 %2, 22 fc.

Pince Letels will estimate in lead well as the insertion of the conditions.

 $\rho(C)$  a.s. =  $T^{ol}$  cord. .  $T^{ol}$ 

$$F(\mathcal{S}_{-}) \otimes H_{1}(\mathcal{S}_{1}(1,2)) \otimes H_{2} = \frac{2}{8 \cdot 14} \omega \frac{1}{8}$$

49. (5)

principal siReda a other abito;

്ചുമാളം പ്രൂപ്പു പുക നാര് ക്<sup>ലൂവ</sup>

$$=\frac{4}{7} \times \frac{3}{7} = \frac{73}{35}$$

50 (5)

In a case of SA  $_{\odot}$  ,  $_{\odot}$  ( ) Let ( ), from both start

 $g_{2}(x) = (x^{2} + y^{2} + y^{2} + y^{2} + y^{2} + y^{2}) = 17$ 

$$P = 800 + \frac{15}{80} + \frac{5}{9}$$

51. (3)

econdard grows, unlik allegren ekt coale but ekt existell telonomi.

 $\mathbb{X}_{2} = \mathbb{Y}_{2} = \mathbb{Y}_{2} = \mathbb{Y}_{2}$ 

 $\Rightarrow \qquad \quad \mathsf{D}_1 = \mathsf{RD}_1$ 

(1) a coup l'emegative liter s<sub>p</sub> = la s<sub>p</sub> is neve cone mission atendare des alles exercises per les ates?

Seath of April 18 Mer

Zolješ sincomys.

59. (2)

 $P(z) = Cp(1 + |\nabla A|^2 + H)$ 

inv ippe (所) 6年37**2**39766 扩Y

. Эт се вија и погојато по де сеза и пројус - Био

59. (5)

$$\begin{aligned} p(z) &= (-1 - 20z + 2) \\ &= \left[ + \frac{3}{2} C_{0} \left( \frac{2^{3}}{2} \right)^{2} + \frac{1}{3} \right]^{2} + 1 \cdot \frac{1}{32} + \frac{3}{32} \end{aligned}$$

94. (b)

$$SD(t) = \frac{1}{2} \quad \text{a. } \quad S(t) = \frac{1}{2}$$

So we where a state of the  $\alpha$  -  $\alpha$  -  $\alpha$  . The  $\alpha$  -  $\alpha$  -  $\alpha$  -  $\alpha$ 

20.00

Princip Pylotody nor Exhibitions

$$= \frac{1}{2} \cdot \frac{1}{\sqrt{2}} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{\sqrt{2}} \cdot$$

$$=\frac{1}{2^{4}}\left[-\frac{1}{4} - \frac{1}{2^{2}}\right] + \dots$$

 $\frac{1}{2}\frac{1}{2}\frac{1}{14(4)}\frac{1}{4}\frac{2}{3}(\cos\theta) \text{ is grain to const.}$  with a=1 to a=1.90

55 (a)

Furth 2 to his 1. For 3 then 3 and 8 sector to only 10 passion ordered gave. Or for the entry (1. Sp. 41 to 12. Sp. (2. Sp. 32. Sp. 33. Sp. 33

Hips. Inc. 4, 8,4,5 on other season of freed to not be a light of State 1 inc. 4 and 5 for the season of U bussis to sea the tree district of a remainder on the season of 
$$\frac{168 \cdot x^{-1} \cdot 16 = 3^{-\frac{3728}{4}} \cdot 5 \cdot \pi \cdot 6}{2^{\frac{3}{2}} \cdot \frac{x^{-1}}{2} \cdot$$

ing melyawa diagram

$$|\mathcal{R}(t), m'(t, t)| = \frac{1}{n} - \frac{n}{16} - \frac{1}{2} \cdot \frac{1}{3} - \frac{3}{36} - \frac{3}{36} - \frac{3}{36}$$

56 (d

Single regalization of positive A 2.20.21 (1995) i.e. turns in the positive of 
prompt with a=b and  $p=\frac{1}{a}$ 

per a uno econt nu riber o l'angicave volves in 5 mats.

sjet meg i høys ke kallet

$$\begin{split} &= (9, 2.21) \\ &= (9), = (9) + (9)(8 + 1) \\ &= \left[ \frac{1}{2} \left( \frac{1}{2} \frac{1}{2} \right) \frac{1}{2} \right]^{2} \cdot \left[ \frac{1}{2} \left( \frac{1}{2} \right) \left( \frac{1}{2} \right)^{2} \right] \\ &= \frac{3}{83} \end{split}$$

 $57. \quad (\phi)$ 

The profit of the most accompanies.

The controlled domination function  $\Phi(s)$  is the 2000-000 in the controlled domination of the controll

Set from any continuous specia

59. Idb

 $T \in \mathcal{O}(G)$  can be in the representation of  $x_i \in \mathcal{V}(G)$  by the G

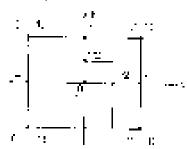
$$2011(4 \text{ me } 98) = \frac{27.5 \text{ me}_{3/2}}{25.5} = \frac{65.}{25} + \frac{65.}{25}$$

$$\frac{27.5 \text{ me}_{3/2}}{25.5} = \frac{65.}{25}$$

59. jb)

is an initial Set. It the entire rectangle for  $m_0$  is the which making  $m_0$  is  $m_0$  by expectage  $m_0$  is absolute of a section of  $m_0$ .

ान्त्रा है है -bissu below as all apply misson in seri



$$\frac{p\left[\max\left\{x,y\right\} \times \frac{1}{n}\right] = \frac{A98 \, o' \, \text{enucks}}{A60 \, o' \, \text{ellicks}} \, \frac{\text{toplish}}{\text{toplish}} \\ \frac{\frac{3}{2} \, \frac{3}{2}}{200} = \frac{\frac{3}{10}}{\frac{3}{10}}$$

B0. (a)

The summation applies up is normally distributed: with  $\mu$  , such that and  $\sigma=200~mm$ 

$$S(2\times 1900) = \sqrt{2\times \frac{19999 + (333)}{9999}} + \sqrt{299} \approx$$

Whe sizes he statement going varies.

100 helidisa buton.

NOW, State Life to great year size

(fr 681) of the environment year to reflect the showing grant

$$g(\overline{\mathbb{Q}} \times \mathbb{Q}) = \frac{1/30}{5} + 0.5\pi$$

 $W^{n} \cdot \partial \{ (v \wedge f) = 0.6 \cdot 0.5 \cdot (-0.36 + 0.36) \approx rg \eta_{2}$ 

Which is a Suga

. Suicholon (a) imes an regular

61. (g)

Pris∞ i termula for (A - e) great by

$$\frac{2^{|\mathcal{A}_{i}|}\lambda^{2}}{\lambda}$$

? I moar of following to be ton # 8 (glass).

Probability of obcessing lewer than 0 cars.

$$(H = 0) + (C = 1)$$
 (e.e. 3).

$$\frac{4^{-2}\lambda^2}{\Delta^4} + \frac{6^{-1}\lambda}{1} + \frac{4^{-3}\lambda^4}{2} = \frac{7}{24^{-1}}$$

(A) kopned option.

82. 3al.

$$\int r(x)dx=1$$

$$|f_{i,j}| = \frac{|A[-1]^2 + 2A - 2[-1]^2 + 2 + 2}{2}.$$
 Otherwise,

$$\int_{\mathbb{R}^{N}} x_{ij}^{N}(x^{N} - 3\phi + 2) d\chi = 1$$

$$|-x| = |x| \left| \frac{y^2}{x} \left( S \frac{S}{2} + \xi \right)^{-\frac{2}{3}} + \frac{3}{3} \right|$$

$$\left\| x^{\frac{1}{2}} \left[ -\left( \frac{3}{3} + \frac{1}{8} \right) - \frac{3}{2} (4 - 1) + 2(2 - 1) \right] - \frac{1}{2} \right\|$$

$$\Rightarrow$$
  $x\begin{bmatrix} \frac{7}{2}, \frac{9}{2} & 1 \end{bmatrix}$ 

$$\Rightarrow \qquad \qquad |\xi| = \frac{1 - |Y_2| - |z|}{s} + \varepsilon$$

$$\lambda = \frac{\beta}{7} - \beta$$

$$\lambda = 0$$

63. (a)

$$f_{ij} = \int_{0}^{\infty} n_{ij} dn dn = \int_{0}^{\infty} d^{2} G(n)$$
$$= \int_{0}^{\infty} \int_{0}^{\infty} d^{2} G(n) dn = \int_{0}^{\infty} d^{2} G(n) dn$$

65. (Ľ)



çalığılı ile mələnədəd aradı in vezip çıkı ələnədə yayındış oldarlış deyelek ili ölülü ülk

#### 96 85.

Specify so consist of the table. When  $\mu = 500$  in -50 in  $\mu(0.550)$ ,  hich is a consistent.

BY (L)

$$F(n) = \frac{n(n)}{n(n)}$$

$$n(n) = 1, n, (n) = 2$$

$$n(n) = (n) = 1$$

$$F(n) = \frac{1}{2}$$

63. (a)

required trials = 
$$\frac{2C_0}{2Q_0} = \frac{4N^2b}{22N(24)} = \frac{7}{2Q}$$

69. Bul.



$$E(0.0) = \frac{1}{2} (C(0.00) - 0.00)$$

$$P_{i}(M) \leq \frac{1}{2} P_{i}(M) = 0.5$$

$$F(A \mid M) = 1 \cdot 1.2 = 0.2$$
,  
 $F(A \mid M) = 1 - 0.5 = 0.5$ 

By total mickel Ally.

Probability: I wants in peripht-equivalent if  $P(G) = P(M) \cdot P(G)$  for

$$=\frac{1}{2}(98)^{\frac{1}{2}}898 = 0.85$$

70. (a)

The number of notice and Fund inflored to bow the set of the consecution of the collection of the coll

$$= \frac{1}{2} + \frac{2n+3}{2} = n + \frac{3}{2}$$
 where sincilar player

in all facility of impossible eventiles, find controls on the little state.

71. Sol.

Let proceed by a because the entire P . So with Q is the substitute

$$P = 2P + 3\rho = 2P + 5P + 3P = 0$$

$$x = \frac{1}{2\pi}$$

est repulsion of occurate extra doctor

$$\sim g_{\rm B} = \frac{3}{500} = 2.00142$$

79. Sa.

whose trainings Matrix further layers figure

of a ping  $\frac{1}{2}$  , is in the a flavor two skills t = -70 Mindle t =

$$\frac{n}{2}y + \frac{n}{2} \cdot b = \frac{2n}{2}$$

Now take racio case  $\gamma$  it with picked charakter has stoing  $\gamma$  in

്യുന്ന (മൂന്ന് പ്രവാധ പ്രവാധ ka Lan landom thesia

$$\operatorname{sign}(g) = \frac{1}{2n} = \frac{3}{2} = 0.666$$

### 70. (c)

1 мни жон сарааалын түрүлдө.

Provabily digetting edeque thead in 1926 ag

$${}^{9}\Omega_{8}\mathbf{x}_{\left(2\right)}^{1/2} {}^{3/2} \left(\frac{1}{2}\right)^{2} = {}^{3/2} \cdot \left(\frac{1}{2}\right)^{2}$$

700 f 100 frig. (20 f) 35 6(1 - are

So regulate to essay by

$$= {}^{2}\mathcal{O}_{8}\left[\frac{1}{2}\right] \times \frac{1}{2} = \frac{.44}{.024} = 0.062$$

#### 74. Sci.

Followid by constraints a fixed 
$$\frac{1}{6}$$

The Usbridge constitutions are those  $5 - \frac{6}{4} \times \frac{1}{10}$ 

Focal probability in  $(y_i = \frac{1}{3}, \frac{2}{2n}, \frac{2}{2})$ 

#### 75. 80.

$$\delta,\delta,\varepsilon,\gamma = -\frac{4l}{m} - 2 \cos \alpha$$

$$0 \Leftrightarrow L_{i, \mathcal{F}} \to \frac{\mathcal{L}_{i}^{i}}{24 \pi} \cup \mathbb{S}_{\mathrm{OMS}_{i}^{i}}.$$

In both the channel of abla 22

$$= \frac{8 + 1}{6} \cdot \frac{6 - 4}{123} = \frac{6}{100A}$$

#### 7B. Sa.

$$2.4 \times 100$$

 $\hat{h}(x)$  is not divisible by  $x\in S$  to  $S_x=\{1,\ldots,x\}_{x\in S_x}$ civistic coor 5 a 5;

$$1 \left\| \left[ \frac{1}{2} \right] + \left[ \frac{133}{2} \right] - \frac{69}{3} \left[ -\frac{799}{8} \right] - \frac{1331}{8} - \frac{69}{12} \left[ -\frac{199}{22} \right]$$
$$\frac{21}{12} = 0.96$$

#### 77. Sal.

र अजिल्ह्यो विकास समित के समार स्थित है। स्थापन स्थापन  $\operatorname{abso}$  is a gibbon  $\operatorname{reg}_{\mathcal{A}} \cap \cup \mathcal{G} = \mathcal{G}$ 

were imparts that Alignored Figure legitively.

NOW IT WAS EVEN US AS A DISCONDINGUISHING. 98.3 using division located was raily, so little BA(-1)B(-1) = BA(-1) + BB(-1)

New sections to attract the Conjugat

$$\frac{d(x)^{-\frac{1}{2}}(A_1)}{2(x)} = \frac{1}{2}(A_1) = \frac{1}{2}(A_1) = \frac{1}{2}(A_2) = \frac{$$

$$-5\,\mathrm{Mp} \qquad \qquad \gamma = \gamma - 2\,\mathrm{M}$$

$$\frac{\partial y}{\partial x} = 1 + 2y = 3 \Rightarrow z = \frac{1}{5}$$

 $= -2 \cdot \alpha \, f \\ (0.005, 0.60 \pm 0.00, 0.00, 0.00) \\$ 

$$-S_{\rm tot} \simeq \frac{1}{2\pi} \int_{-2\pi}^{\pi/2} -9.22$$

### 76 (y)

$$v = \mathbf{I}(\phi(v))$$
 (v). See Section 15.

Swinderd ad-45th in

$$G = \{ \Sigma x^2 \Xi(x) - (\log p) \gamma \} t^{2 \frac{n}{2} \log p}$$

$$\frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \right) \right) + \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \left( \frac{1}{2} \right) \right) \right) \right) \right) = 0.00001^{\frac{1}{2}} + 0.3$$

### 79. (a)

$$f(\mathbf{A}_{i}) = \Sigma_{i} \left(\mathbf{p}_{i}(\mathbf{j}) - \mathbf{j}\left(\frac{1}{\mathbf{p}_{i}} - \mathbf{j}\left(\frac{\mathbf{x}}{\mathbf{y}_{i}}\right)\right)\right)$$

$$=\frac{2}{1}-\frac{3}{1}-\frac{3}{1}-\frac{3}{2}-\frac{3}{3}-1$$

$$\max_{i \in \mathcal{S}_i} \| \mathbf{c} \|_{\mathcal{B}_i}^{2n} \leq \left( \frac{2^n}{n!} + i \left( \frac{1}{3} \right) \right)$$

$$=\frac{2}{3}\cdot\frac{4}{5}=\frac{2}{3}+\frac{2}{5}\cdot\frac{4}{3}$$

Variance in 
$$F(\mathcal{S})=(L_{\mathcal{A}}^{\prime})^{2}=\frac{d}{d}-1=\frac{1}{d}$$

#### ΩГ. 3cl.

-,	÷	R	<u> </u>
D.J.	2'6	<u> </u>	

$$D = p(2nn) = \frac{n}{8}$$
$$D = 1 - n = 1 \cdot \frac{2}{6} - \frac{n}{8}$$

Firsh oil acting red event  $(x,y) \in \mathbb{R}^n \times \mathbb{R}^n$  ( Affanti Le co y

$$\begin{split} &= p^{2} - 2(-\beta)(-\delta) \\ &= {}^{2}C_{3}e^{2}(2)^{3} - {}^{2}C_{3}e^{2}(2)^{3} \\ &= {}^{2}C_{3}\left(\frac{2}{3}\right)^{2} \left(\frac{1}{3}\right)^{3} e^{2}(2) \left(\frac{2}{3}\right)^{3} e^{2}(2)^{3} \\ &= 2\left(\frac{4}{36}\right)^{3} + \left(\frac{3}{213}\right) \\ &= \frac{48}{210} \left(\frac{3}{213}\right) - 6.258 \end{split}$$

ar 3et

The tree diagrams the problem is about bolod. Rest into a copy by

$$= \frac{\sqrt{1 + \sqrt{5}}}{\sqrt{0}} - \frac{\sqrt{5}\sqrt{5}}{\sqrt{5}}$$

$$= \frac{21}{277 + 2.77 + 2.77}$$

$$= \frac{21 + \sqrt{5}}{6 = 0.1 + 20}$$

$$\Rightarrow -120.0 = 1180$$

82. 60

Vacan 
$$x = 0$$
  
 $P(x, y, \Delta) = 0$ ,  $x = 0$ ,  $x = 0$ ,  $y =$ 

83. (a)

$$\begin{aligned} S(s) &= \frac{s^{-1} 2s^{2}}{s^{4}} \\ As(u_{1} + ks^{2}) &= 5(0) \cdot W(1) + s^{-1/2} \left[ \frac{s \cdot 2^{6}}{s^{4}} + \frac{5 \cdot 2}{s^{4}} \right] \\ &= 0 \cdot s(2) = \frac{6(2)}{s^{4}} + 5.5345. \end{aligned}$$

94 Sac

$$\begin{split} \Delta \Omega &= \left(\frac{1}{5} \frac{|\nabla v_{i}|^{2}}{|\nabla v_{i}|^{2}} \frac{|\nabla v_{i$$

35 Sa

Figure 2.5 
$$\times$$
 5  $\times$  6  $\times$  6  $\times$  6  $\times$  7  $\times$  6  $\times$  7  $\times$  6  $\times$  7  $\times$  6  $\times$  7  $\times$  7

85. (b)

n participa belo — ele colonida frontes curso non ele el Blancon el Curso. El carro de Branco de

$$\frac{a}{a} = \frac{1}{2} \left(\frac{a}{a} \frac{1}{a} \frac{1}{a}\right) \Big|_{Q^{\frac{1}{2}}} = 0$$
 in a call modified

The proof of the first  $-\infty$  in the matrix 0.5

$$\frac{e^{-2\pi i \lambda}}{10} = \frac{e^{-2\pi i \lambda}}{1!} = \frac{e^{-2\pi i \lambda}}{1!} = \frac{e^{-2\pi i \lambda}}{1!} = \frac{e^{-2\pi i \lambda}}{3!} = \frac{e^{-$$

40 254

$$|\mathcal{R}(f) - O(|X_{g} - G)| \leq \frac{|\Phi(f) - G(x_{g}, x_{g})|}{|\Phi(X_{g}, x_{g})|} = \frac{3}{2} - C_{g} f_{0}$$

69. Sol.

PT1.14 ally chalkes to the month respect color.

$$= 1 - [A \times Y \times S]$$
  
= 1 -  $(0.2 \times 3.0 \times 0.00 + 0.07)$ 

90 m

Cisen ((bassing the many) 14 in

 $\phi(\text{pass}(i))$  the even in  $\phi(\text{SOM}) = 0.05$ 

The part of passible pa

i – μέν ευφί ατα έτη πε examin

$$\frac{2(\text{lasting personned}) \cdot 80\%}{2(\text{lasting the ason})} = \frac{108}{0.2} = \frac{1}{7}$$

 $\theta^* = \{\phi\}$ 

$$\mathcal{E}\left(\frac{Y}{S}\right) = \frac{P(Y \cap S)}{P(X)} = \frac{1/18}{164} \cdot \frac{1}{8}.$$

92. - (y)

 $P(A \otimes B_0) = g(B \otimes B \otimes B \otimes B \otimes g(B)) + g(A \otimes B \otimes B \otimes B \otimes g(B))$ 

$$\begin{aligned} &=\frac{1}{5} \left[ \frac{5}{5} \cdot \frac{5}{6} \cdot \frac{5}{6} \cdot \frac{1}{5} \right] \cdots \\ &= \frac{1}{6} \left[ 1 + \left( \frac{5}{6} \right)^2 \cdot \left( \frac{5}{6} \right)^2 \cdot \cdots \right] = \frac{1}{6} \cdot \frac{1}{1 + \left( \frac{5}{6} \right)^2} = \frac{8}{1} \end{aligned}$$

8a. Sol.

Sivep. g = 0.

$$\begin{bmatrix} x & 0 \\ \frac{x}{2}, & 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$

 $\operatorname{Adding} \operatorname{Adj} = \operatorname{Adj} = \operatorname{T}(A_{\mathbb{T}}) - \operatorname{Adj} A_{\mathbb{T}}(A_{\mathbb{T}})$ 

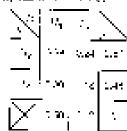
$$u_0 x_0 = \sum_i X_i \theta_i = 0 \times 0 \times \pm 1 \times \mathbb{R} x_0 + \infty x_0$$

$$F(\mathbb{R}^p) = \sum \mathbb{X}^2 p^* = \mathbb{C}^p \times \mathbb{R}^p = \mathbf{1}^p : \mathbb{Q} \in \mathbb{R}^p$$

$$\label{eq:constraints} \mathcal{L}^{-1}(S[X]) = \mathbb{C}^{n}(X^{2}) - \operatorname{St}(X^{n})^{-1} - \operatorname{Org} = 0.00 = 0.04$$

94. (a)

Tremtogen i tameten kommunistas ont. Periodity sebara konego



Эгогологийн мөрөндө<u>г</u>

$$\mathbb{E}(Y_{i,j}) = 0 \quad \text{s. } \mathbb{E}(T_{i,j} - \widehat{Y_{i,j}}) \in T_{i,j}(Y_{i,j}) = Y_{i,j}(Y_{i,j})$$

 $P(T_0^* = 1.40)$ 

ବଳ ଦିଆ କ ଜିଲ୍ଲାର ଓଡ଼ାର ଓ accet anomality ଓ ଏହି ଓ ଓଡ଼ିଆ ଏହି ବଳ୍ପି ଓଡ଼ିକ କଥା । ଏହି ଲୋକ୍ଷ୍ୟ

ிhe son resses on நடர் சிக்கு பூரி சாவர்கள் பு செய்யு சரிக்கை எவிகிக்கும் நித

Pane Streen partient

This case S were independent that while (y,y) productions will be +y about the product of the y argued product for

- onestample

$$P(P_{ij}) \cdot P_{ij} = 0.25$$

 $P(rh) \cdot (rhh) = 0.98 \times 0.99 \cdot (0.50 \gamma)$ 

 $\mathsf{Clour} \circ \mathsf{alb}_{\mathsf{q}} \cap \mathsf{el}_{\mathsf{q}} \star \mathsf{F}(\mathsf{el}_{\mathsf{q}} \circ \mathsf{F}(\mathsf{el}_{\mathsf{q}}))$ 

Kalènda Parent independent

18  $(\tilde{\theta}+t)$  Care dependent Solonia  $\mu(y)$  at Lise and protein  $\mu(y)$  at Lise

95. (E)

Definible the all conflicts the later procession and notice

tel Alberto rumas in sinex xx lweps Probedity or obtaining at Isax lwy tyyt e firmthyw fair Joe turnools

$$\begin{aligned} &1 + \left\{ 7 \left( N + 2 \right) - P \left( N + 1 \right) \\ &- 1 + \left[ 2 \left( 1 + 2 \right) + 2 \left( 1 + 2 \right) \right] \\ &- 1 + \left[ 2 \left( 1 + 2 \right) + 2 \left( 1 + 2 \right) \right] \\ &- \left[ 2 \left( 1 + 2 \right) + 2 \left( 1 + 2 \right) \right] \\ &- \left[ 2 \left( 1 + 2 \right) + 2 \left( 1 + 2 \right) \right] \\ &- \left[ 2 \left( 1 + 2 \right) + 2 \left( 1 + 2 \right) \right] \end{aligned}$$

98. (p)

$$\mathsf{Emb}(\mathsf{Mid}_{\mathcal{A}} = \mathsf{PC}_{\mathsf{A}}(\mathsf{o}_{\mathsf{A}})) \mathsf{o}_{\mathsf{A}} \mathsf{o}_{\mathsf{A}} \mathsf{o}_{\mathsf{A}}$$

97. Soi.

$$\begin{aligned} \phi_{s,t} &= \left(\frac{\lambda}{a}\right) 4 + s^{\frac{1}{a}} \left(0.25 \times 20\right) \\ &= 0, \quad \left(0.15 \times 8\right) \\ &= 0, \quad \left(\frac{\lambda}{a}\right)^{\frac{1}{a}} \left(1/a\right) 2s \end{aligned}$$

$$\begin{aligned} & \cdot |\mathsf{Mont}(u_0) = \int_0^u u_0^{2} (1-z^2) dz \\ & = \int_0^u u_0^{2} \left(1-z^2\right) dz \\ & = \int_0^u \frac{dz}{dz} - \frac{u^2}{2} \frac{1}{2} dz - \frac{1}{2} \frac{z^2}{2} - \frac{u^2}{2} \frac{1}{2} dz \\ & = \frac{0}{12} \frac{dz}{dz} - \frac{1}{2} \frac{1}{2} = 0.003 \end{aligned}$$

99. Sy

$$|\psi_{t}| = \frac{\log t}{f} \frac{\partial x_{t}}{\partial t} = \frac{\log t}{\log x}$$

Newger - 680 139

$$= -\frac{\frac{1}{2}}{5} w(x) n_2 - \frac{2}{5}$$

$$=\int_{\mathbb{R}} d \langle T | e^{\frac{i}{2} H_{0}} \rangle \, d h = \frac{d}{d}$$

$$-4.3 \left[ \frac{3}{2} \right] - \sqrt{\frac{3}{3}} = \frac{2}{3}$$

$$\left\| u \right\|_{\mathcal{B}_{k}^{1}}^{2} = \left\| u \right\|_{\mathcal{B}_{k}}^{2} = \frac{1}{2}$$

$$\log p_{ij} = -\int_{0}^{\infty} f_{ij}^{*} dx_{ij} = 0$$

if claiprobel hity is a cover as  $(a,b) \in \mathbb{R}^{N}$ 

$$= \int_{0}^{1} (a + b \cdot b) db$$

$$= \int_{0}^{1} a x - \frac{2a^{2}b^{2}}{a} = 1$$

$$\begin{array}{ccc} -3 & -3 & -2 & -1 \\ -2 & -2 & -2 & -2 \end{array}$$

whereas the final colline  $\mathcal{G}(t) = 0.975$ 

$$\label{eq:continuous} \langle x_0 \rangle = \frac{(g_1 - 1) \cdot (x_0 + c)}{(c - c)^{n-1}} + \frac{1}{2}$$

Rice was need 
$$\frac{2h}{h} \frac{2h}{h} 2h 2h = \frac{1}{h}$$

99 (a)

$$\frac{3}{\frac{1}{12}} \left( \frac{1}{12} + \frac{$$

100 Sol.

$$P(P) = 0.5$$
  
 $P(T) = 0.5$ 

gang gapasakan melalakan dalah

sa amhabaty a' gelling aya lib che tradule 'a

101. (8)

$$\begin{array}{ll} G(X_1 + 2X_1 + 2Y_1) \\ = G(X_1 + 2Y_1) + G(X_1 + 2Y_1) \\ = G(X_2 + 2Y_1) + G(X_1 + 2Y_1) + G(X_1 + 2Y_1) \\ + G(X_1 + 2 + 2Y_1) + G(X_1 + 2Y_1) + G(X_1 + 2Y_1) \\ = G(X_1 + 2Y_1 + 2Y_1) + G(X_1 + 2Y_1) \\ + G(X_1 + 2Y_1 + 2Y_1) + G(X_1 + 2Y_1) \\ = G(X_1 + 2Y_1 + 2Y_1) + G(X_1 + 2Y_1) \end{array}$$

102 (8)

÷

The map vising ambinding of colors against level  $\frac{1}{2}$ 

Hordey (410) lpct of

 $(4000)\,\mathrm{yr}$  to order a probability

 $\phi_{(-1)}(n) = \nabla_{(-1)} \nabla_{(-$ 

Ленть уверный с соложен!

$$\alpha = 0.08 \pm 0.5$$

$$g_{\rm M} = g({\rm h.rm} \Delta t = V) + \frac{2.5 \times 0.5}{0.5 \times 0.5} = \frac{0.05}{0.75}$$

$$\frac{1}{3} = 0.23 (100.9 \text{ decimal places})$$

100. Onl.

$$\frac{\log_{10}(x-x^2)^{\frac{1}{2}}-\frac{x^2}{x^2}\sin(xx)\log(x)}{\log_{10}(x-x^2)}$$
 
$$=\frac{x^2}{\log_{10}(x-x^2)}$$
 
$$=0.5^{\log_{10}(x-x^2)}\sin(x-x^2)$$
 where they

 $59594 \times 100 \, hm + 0.9 \times 0.24 \, hg \, x + 9.4$ = 0.06 - 0.2 = 0.06

ID4 (e)

$$\frac{{}^{3}C_{1}\frac{2}{8}\frac{C_{1}^{3}}{C_{1}}C_{1}}{8} = \frac{89}{8000\frac{\sqrt{6}C_{1}}{8000\frac{\sqrt{6}C_{1}}{800}}} = \frac{89}{80000\frac{\sqrt{6}C_{1}}{8000}} = \frac{6}{2507}$$

TEG Sal

Madie record an elegador file modicido en in codes of apolicipsed a tractor's arranged to ascending three CCC of speed on tak will be presignitiannie negoznosta w tied zastna i jie ``Y\*`(\$-1

ASSISTED grader on the appead at the safe ku, 00, 45, 81, 55, 66, 66, 62, 69, 75,

Modeling space 
$$=\frac{58 + 58}{5} = 56 + 60 \text{ Mpc}$$

107. ;h)

Wear of Principles

$$\prod_{i=1}^{N} \left(\frac{1}{2} + 1\right) \operatorname{Co}_{i} = \frac{n}{4} \left(\frac{1}{2} + \frac{1}{4}\right) \operatorname{Co}_{i}$$

$$= \begin{bmatrix} \frac{r^2}{2a} & \frac{a}{2} \\ \frac{a}{2a} & \frac{a}{2} \end{bmatrix} \begin{bmatrix} \frac{a}{2a} + \frac{r^2}{2a} \\ \frac{a}{2a} & \frac{a}{2a} \end{bmatrix} \begin{bmatrix} a & a \end{bmatrix}$$

$$|\mathcal{F}(t)|^2 = \int \left[\lambda \frac{2^d \lambda}{\epsilon^d} t^{-1} t^{\frac{1}{d}} t + \int_0^2 t^{\frac{1}{d}} \frac{dt}{\epsilon^d} + t^{\frac{1}{d}} \right] dt$$

$$-\left[\frac{a^n}{4a}+\frac{\lambda^3}{b}\right]^{\frac{1}{2}} = \left[-\frac{\lambda^4}{2a}+\frac{a^4}{b}\right]^{\frac{1}{2}} = \frac{a^3}{b}$$

$$\Rightarrow \log (\log \log \log \frac{n^2}{n})$$

Med, metal all sed in Fig.

$$= \int_{0}^{\infty} \left[ \frac{1}{2} \int_{0}^{\infty} \left[ \partial x - \frac{\partial}{\partial x} \right] \int_{0}^{\infty} \frac{\partial}{\partial x} \right] dx = 0.$$

 $V^{(n)}$  along the  $C^{(n)}$   $= \{\Delta_{n}\} \otimes_{\mathbb{R}^{n}} \mathbb{R}^{n}$  ,  $\{\Delta_{n}\} \otimes_{\mathbb{R}^{n}} \mathbb{R}^{n}$ 

$$d(x^2) = \int_{0}^{1} x^2_1 \cdot \frac{x^2}{1} dx + \int_{0}^{2} x^2 \cdot \frac{1}{2} dy + \frac{x^2}{2}$$

$$\Rightarrow$$
 Condition is  $\frac{\mathbf{a}^2}{2}$ 

is Mean or  $\hat{\eta}(t) + i \hat{d}(\eta(t)) + i \hat{d}(\eta(t))$  $\Omega^{-}(x)$  and  $\Omega^{-}(x) = 0$  from

108. Sa.,

$$P = x^{-1}P + C^{-1}, \ y \in \Omega(0)$$

 $X_1$  no or done; they

$$f(x|2,1) = 1 - f(x - y) + y - 2f_{x}(y - y)f(y|y)$$

$$f(x|2,1) = 0.4966$$

109. šet.

Postson si-tribution,

 $b^{2}(1)$  in the normal  $a \in \mathbb{R}^{n} = a$ .

Gray the second with  $\exp g_{\Delta}$ 

$$e^{\lambda} = \lambda = 2$$

$$-\lambda^{\prime}$$
  $\lambda$   $\lambda$   $\lambda$   $\lambda$ 

$$(3 - 2)(s - 1) = 0$$

37년 (원)

), we specially flow on matrix  $\mathcal{H}_{h}$  whose

Other from the  $t=V_{\rm M}$  gapes +  $_{\rm min}$ 

Sectional designs of 
$$\sqrt{qq_{max}} = \sqrt{2}$$

111. Sol.

Size 
$$f(x) = \frac{1}{2}(1 + \frac{1}{2}(1 + x) \leq x \leq 1)$$
  
=  $\frac{1}{2}(1 + x + x) + \frac{1}{2}(1 + x) + \frac{1}{2}(1 + x + x) + \frac$ 

$$\infty = \int \!\! ds \, ds$$

$$\Theta = \begin{bmatrix} \frac{1}{2} & 1 \\ \frac{1}{2} & -1 \end{bmatrix}$$

$$\rightarrow \frac{1}{a}$$
 . ?

$$3 = \frac{1}{5} = 0.5$$

, 12. Ea4.

$$P(x) = y \le 1, = -\int_{-\pi/2}^{\pi/2} \int_{0}^{\pi/2} (1.5) \cdot y(5x) dx$$

$$= -\frac{y}{\sqrt{y}} \int_{0}^{\pi/2} (x) \cdot y(5x) dx$$

$$= -\frac{\int_{-\pi/2}^{\pi/2} (y - y^{-1})^{2}}{\sqrt{y}} dx$$

$$= -\frac{\int_{-\pi/2}^{\pi/2} (y - y^{-1})^{2}}{\sqrt{y}} dx - -\frac{(x - y^{-1})^{2}}{\sqrt{y}} dx$$

$$= -\frac{1}{2} - \frac{1}{2} = \frac{1}{2} = \frac{100}{3}$$

113 (19)

$$\begin{split} \Phi_{1}^{*}(z,z) &= \int_{-1}^{1} (|z|) dz, \\ &= \int_{-1}^{1} (|z|) dy - \int_{-1}^{1} (|0|) d(z') + \int_{2}^{2} (|0|) dz, \\ &= \frac{1}{2} (|z|)^{2} + \int_{1}^{2} (|1-1|) \frac{\beta}{\beta}. \end{split}$$

117. (9)

$$\begin{aligned} & \frac{\partial x^{n} - x^{n} \partial x}{\partial x^{n} - x^{n} \partial x} \\ & = \frac{1}{2} \frac{\partial x^{n} - x^{n} \partial x}{\partial x^{n} - x^{n} \partial x} \\ & = \frac{1}{2} \frac{\partial x^{n} - x^{n} \partial x}{\partial x^{n} - x^{n} \partial x} - 1 \\ & = \frac{1}{2} \frac{\partial x^{n} - x^{n} \partial x}{\partial x^{n} - x^{n} \partial x} - 1 \\ & = \frac{1}{2} \frac{\partial x^{n} \partial x}{\partial x} - \frac{1}{2} \\ & = \frac{1}{2} \frac{\partial x^{n} \partial x}{\partial x} - \frac{1}{2} \frac{\partial x^{n} \partial x}{\partial x} \\ & = \frac{1}{2} \frac{\partial x^{n} \partial x}{\partial x} - \frac{1}{2} \end{aligned}$$

115. Sol.



THE Go

Proposition with a subsection of example  $\frac{\omega}{2}$  .

137, 54

Modern samblighest is other with seven one of  $_{\rm CCC}$  and  $_{\rm CCC}$  property of the matter of  $^{12}$ carefully out till explicit. Figure 3 to 5, 5, mileta

118 So 
$$\frac{1}{(1+c)^{2}} = \frac{1}{(1+c)^{2}} = \frac{1$$

$$\frac{1}{4}(x_1,y_1,y_1) \leq 4 + 5 + 5 x \leq 4 + \frac{2}{3} = 3.5$$

119 85

and gains then the white same e , there is gradie in Albertalia von Sich (S.M.)  $\omega_{\rm B}$  the the water of the plane of  $t \leftarrow j$  and on.

Then 
$$x = \begin{bmatrix} 0 & y & y \\ y - y & y & y \\ 0 & y \end{bmatrix}$$

$$y \mapsto (x, y)$$

$$y \mapsto (x$$

$$= \int_{2}^{9} \left( \frac{1}{6} \right) d\theta = \int_{2}^{9} (5 - 7) d\theta$$

$$= \int_{2}^{10} \frac{6}{5} \left( \frac{1}{25} - \frac{35}{3} \right) = \left( \frac{1}{25} - \frac{35}{3} \right)$$

$$= \int_{2}^{10} \left( 25 - \frac{35}{3} \right) = \left( \frac{1}{25} - \frac{35}{3} \right)$$

$$= \int_{2}^{10} \left( \frac{25}{3} - \frac{35}{3} \right) = \left( \frac{1}{25} - \frac{35}{3} \right)$$

$$= \int_{2}^{10} \left( \frac{25}{3} - \frac{35}{3} \right) = \left( \frac{1}{3} - \frac{35}{3} \right) = 0.9$$

 $120^{\circ}(a)$ 

121. Sa

So the Prisson of the Lagranger Signature  $X \in \mathbb{R}^2$  where  $X \in \mathbb{R}^2$  is the Police of Barriagon Signature  $X \in \mathbb{R}^2$  of  $X \in \mathbb{R}^2$  and  $X \in \mathbb{R}^2$  is the Lagranger  $X \in \mathbb{R}^2$  of  $X \in \mathbb{R}^2$  and  $X \in \mathbb{R}^2$  of  $X \in \mathbb{R}^2$  and  $X \in \mathbb{R}^2$  is the Lagranger  $X \in \mathbb{R}^2$  of  $X \in \mathbb{R}^2$  of  $X \in \mathbb{R}^2$  and  $X \in \mathbb{R}^2$  of  $X \in \mathbb{R}^2$  o

 $\frac{39}{39} = \frac{5(9)}{100} = 0.4 \pm 5 \pm 0.05$  (equited value = 0.00 + 4  $\times$  0 = 4  $\pm$  0.4

122, Soc.

Since the right standard critical accentional without rependent of pleasess althought.

$$\Rightarrow \qquad \forall (H) = \frac{1}{2}$$

123. (b)

or extends lie

$$S(x) = \frac{1}{|x|^2} \cdot \frac{1}{|x|^2} = \frac{1}{|x$$

Тир са која је да да

Thitabile Seni

$$G(t) = \frac{1}{\pi \sqrt{2\pi}} \int_{0}^{t} \frac{dt}{t} \int_{0}^{t} \frac{dt}{t} dt = \frac{1}{\pi \sqrt{2\pi}} \int_{0}^{t} \frac{dt}{t} dt$$

The parameters are  $\mu$  and  $\kappa$ The element property is (a)

124. (b)

$$\int_{0}^{1} (a - ax) dx = 1$$

Obtain to, is defined the waves on  $\nu_{\rm c}$  and

# **Numerical Method**

### 6.1 Introduction

May we are a methods user to a two coughtness where note integrals u is the differential equations can be along the line and y into two  $y_1 + x$ 

- j Aralyfan Mchods
- 2 Name in Architects

### 6.1.1 Amelytical Methods

For yield methods are preservation by an analysis of w equation obtains well for directly as a recognised (upon two interms all say v, we define the cross steps  $V_{v}$  in a color of v

### Example 1.

$$g_{0} g_{0} g_{0} + N_{0} = c \operatorname{and} g_{0} \operatorname{col} g_{0}$$

A silyrinol solution: 
$$z \; = \; \frac{- \chi^2 - \chi^2 G^2}{2 \alpha} \; \; \; 4 \alpha \alpha \label{eq:definition}$$

### Example 2.

$$\rho_{\rm ML} \exp_{\mathcal{E}} \times \operatorname{cute} \mathcal{C}, \quad \left[ \int_{0}^{\lambda} \hat{L}^{2} |\hat{\Phi}|^{2} \right] = \left[ \frac{\lambda^{2}}{2} \left[ \int_{0}^{1} \frac{d^{2}}{2} \frac{|\hat{f}|^{2}}{2} - \frac{f^{2}}{2} \right] \right]$$

#### Esample3.

Yawa Ne cinoro dia l∌ pisilah

$$\frac{dv}{dt} = 2x = 0$$
 with initial contribution  $p(0) = 2$ 

Another point 
$$\int \frac{dt}{t} = \int \frac{dt}{t} dt$$
 
$$\frac{dt}{dt} = \frac{1}{2} \frac{dt}{dt} = \frac{1}{2} \frac{dt}{dt}$$
 
$$\frac{dt}{dt} = \frac{1}{2} \frac{dt}{dt} = \frac{1}{2} \frac{dt}{dt}$$
 
$$\frac{dt}{dt} = \frac{1}{2} \frac{dt}{dt} $

 $y = y \pm 3 e^{3}$  is the required strong the 29.000

#### 6.1.2 Numerical Methods

There exists problem is considered to up  $c_{\pi}$  be smallerly as we shall be a more unusual to

n vin elitotsout on, neter tell'impry en, ng tres i elemente me de monomatee, vege form væpoket get allafora using som elekgit i til makmamondet ombet i vas rusud vig reida modogra ette rive mitre samer ekults

The effortiago of purposed in coords is making those proventies early on a purposed range of purposed compared visite years yields on the which was convenient in  $\Phi$  class of purposed in  $\Phi$ .

or exemple it, each are not also yablu southone evaluate only of your about long, each only sect Whereas Authorical methodose if electric solve polyingmonor plus only or gray cogree

Alta funder da la cultora de l'agusca on il est as val ca noni lest equations, en elles analation a la tigna  $\theta$  cally for  $\theta$  ,  $\theta$  in equations  $\theta$ .

Will the Lebert of a instruction of a general pulmonth) unique course ingligance in time both nethods note that the expects in a submediate important and the boson of the course of the

A though Munierval Matter were supposed as the supposed as the chost of p and a watch problem we would be used the supposed for the chost of the supposed for the sup

- $\Gamma = 3$  ration of  $a_{\rm r}$  and  $a_{\rm r}^{\prime}$  in participation, where  $a_{\rm r}^{\prime}$
- $2 \operatorname{double} n$  (folgowight in this way undertails as a partial size of the  $\alpha$
- $\delta = 5$  which on stability angular
- Solution also thank a term is sleguage as

The coverage of numerous methods will applicability the ejections of sixthe-relact problems is disadvantaged from error matrix of salt resets, electron as a surface and containing the problems are the ejectron of a surface and containing with normal matrix the ejectron of  $\Gamma$ 

## 6.1-3 Errois in Numerical Methods

- Round-off Errors Loss in signal of Imion is spread appacable. Is demonstrated a money for participal
  participal beautiful and a construction of the commence of extending participal of the participal
  many significant digits.
- 2. Tourisation Error: Tourisation of the discussion of the contribution of the matter  $x \in \mathbb{R}^n$  and  $x \in$

#### EXample:

Taylors and Masserine Series by showing climate to k isolated the secretary was imitation may all these transfer as

After the probability of the probability of the second probability of the probability of

For segment in any of a row is use contributing a soluting any use using accommon as a segment of double  $T_{\rm tot}$  protected of the differences.

which the stressor sequence to average methods in order to the layers soften a green.

Fit example, the submonth in Single mention for the magnificant  $u_{ij}$  costrains as a selection of the left followers and the description of the left followers and the description of the selection of the ending selection of the end of the order of the figure of the

or costriple, the Gauss 84 stellar phodimals rang system of the equations are |k| styles or (localize) the large September 1995. He have second and heavier Bhonson and house used forming spaces, a get two second and enterphile or (a check the total k).

QuantifyingErmis in Humorical Methods: There are 8-years in measures to applicable to sufficience or sufficience with a medical measures.

## 6.2 Numerical Solution of System of Linear Equations

Dues that the reductive just the property of the respect to the resonant of  $x \sim 2\pi$ 

principle (1841-0140-018-94)

$$\begin{vmatrix} a_{1}, a_{2}, \dots, a_{n} \\ a_{2}, a_{2}, \dots, a_{n} \\ \vdots \\ a_{n-1}, a_{n}, \dots \\ a_{n-1}, a_{n-1}, a_{n} \end{vmatrix} \begin{vmatrix} a_{1} \\ a_{2} \\ \vdots \\ a_{n-1}, \dots \\ \vdots \\ a_{n-1}, \dots \end{vmatrix}$$

$$\begin{vmatrix} a_{n-1}, a_{n} \\ \vdots \\ a_{n-1}, \dots \\ \vdots \\ a_{n-1}, \dots \end{vmatrix}$$

$$\begin{vmatrix} a_{n-1}, a_{n} \\ \vdots \\ a_{n-1}, \dots \\ \vdots \\ a_{n-1}, \dots \end{vmatrix}$$

By in this about the characteristic of countries their models it, was this classic, but it such that they expected of the area to contain the area of the contained of the characteristic of the c

Tinggo are self-fixed.

- Motorcovers on Mat 2001.
- A normal Hural
- 2. Cities and polytocide in the language of Manada)
- 4. புத்துக்கோள் institution Method
- 5 Gauss Jorge & Valenti
- g. Carde-Solde Lewijke Virlaaf.
- z, iligajak, mirottvo Velebbi.

nan's book, we say Popus on It separatisation. Our exPiration at in Cause Suize. Manage of ly

# 6.2.1 Method of Factorisation or Triangularisation Method (Dollttle's Triangularisation Method)

This is without a parent with a not the page which motify A was the compaction of the form A which is an integral of the page A with A and A which is a substantial of the page A with A and A with A and A and A are the A are t

Walkers cor, or Jahris control tradity/land

$$S_{1}(x_{1}+X_{2})_{2}+X_{3}(x_{2}+X_{3})_{3}=0$$

$$\theta_1\cdot Y_1 \in \mathcal{C}_1, x_1 \in \mathcal{C}_2, Y_2 \in \mathcal{C}_3$$

$$\theta_2 \approx 1.5 \, \mathrm{ms}_2 + \chi_{\mathrm{pol}_2} + \chi_{\mathrm{pol}_2}$$

which varius water in the joint

$$AX = 0 ... (f)$$

$$a = 0.0$$

where 
$$i = \begin{bmatrix} 1 & 0 & 0 \\ 5 & 1 & 0 \end{bmatrix}$$
 (12)

$$\frac{\Gamma_{G_{1}}(v), \nu_{G_{2}}\Gamma}{v = \frac{C - \omega_{G_{2}} \nu_{G_{2}}}{C - \nu_{G_{2}}}.$$
 (4)

The dividuty particulars 
$$y' = y'$$
 . (vi)

which are dissipated and exploring  $= \boldsymbol{\theta}_{q}$ 

and can be a seed on  $x_{i,j} > \infty$  if the range of substitution. Calcot, if all and , the state  $x_i(y_i)$  becomes

$$\begin{aligned} p_1 x_1 - p_{12} r_2 - p_1 x_3 &= p_1 \\ r_2 x_1 - p_2 r_2 &= p_2 \\ r_{12} r_2 &= p_3 \end{aligned}$$

will can't — silved be two sword's invitinging

We stall in widesoftens sufficiently operating the managers and of the floor and  $\theta$  protection  $d_{\theta}(\theta)$  matter of grider  $\theta$ . For the refer of  $H_{\theta}(\theta)$  we given

$$\begin{vmatrix} 1 & 0 & 0 & -a_0 & a_{11} & a_{22} & b_{23} \\ b_0 & 1 & 0 & 0 & a_{12} & a_{23} \\ b_1 & b_1 & 0 & 0 & 0 & a_{23} \\ \end{vmatrix} = \begin{vmatrix} a_{11} & a_{12} & a_{22} & a_{23} \\ a_{22} & a_{23} & a_{23} \\ a_{23} & a_{23} & a_{23} \\ \end{vmatrix}$$

Multiplying the vertices on the Hilleria equality the colors and the discrete sease the descent set of both sides we get

$$||A_1| = |A - A_1| = a_{\alpha_1} \cdot a_{\alpha_2} - a_{\alpha_1}$$

$$\frac{2\pi i m}{2\pi} = \frac{3m}{2}$$

$$C_{ij}x_{j} + x_{j} = q_{ij}$$

$$y_{ij} = q_{ij} + q_{ij}$$

$$= \frac{b_{g_1} - b_{g_2}^2 - b_{g_1} x_1}{b_2 b_{g_1} + b_{g_2}^2 - b_{g_3}}$$

$$\Rightarrow \qquad \qquad \forall \underline{z} = z_{24} + z_{24} \underline{a},$$

$$\tau_{2}(\mathbf{L}_{1})=\mathcal{L}_{\mathrm{eff}}^{2}$$

$$-2 g_0 r_0 = 2 g_0 g_0 + 2 g_0$$
$$r_0 = \frac{g_0}{g_0} \frac{\partial}{\partial r_0} r_0 r_0$$

$$\begin{array}{lll} Last < & & r_{21} \approx r_{2} - f_{22} > r_{2} + f_{23} > r_{23} \\ & & r_{23} = 2 \frac{r_{2} - f_{23} + r_{23} + r_{23}}{r_{23} + r_{23} + r_{23} + r_{23}} \end{array}$$

Jie wiji bih at majap yozur ilbe (\*1647).

Finally, 
$$I_{\text{AB}}(\lambda_1, -\lambda_2)$$

#### Examplé:

Solve / elements land &

by the cathridge on a reliable.

#### Salution:

$$P = \begin{bmatrix} \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{1}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{1}{2} & \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{1}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{1}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \end{bmatrix}$$

The least (a) 
$$P = \begin{bmatrix} \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \end{bmatrix}$$
The least (b) 
$$P = \begin{bmatrix} \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \end{bmatrix}$$
The least (b) 
$$P = \begin{bmatrix} \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \\ \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} & \frac{3}{2} \end{bmatrix}$$

one have all protecting security agreement by the conflict as

$$\begin{bmatrix} 1 & 1 & 0 & 1_2 & 2 & 4 \\ \frac{1}{2} & 1 & 9 & 0 & \frac{1}{2} & \frac{9}{2} \\ \frac{1}{2} & 2 & 1 & 2 & 3 & 1_0 \end{bmatrix} z_1^2 = \begin{bmatrix} 9 \\ 6 \\ 2 \end{bmatrix}$$

solenge is vysom by investigation in welco.

$$\varphi_i = G_i \frac{\gamma_i}{2} + p_i \,, \qquad \epsilon$$

$$r = \frac{3}{2}$$

$$\frac{2}{2} \ln |f(x, t)|^2_{L^2} = 3 \exp(y_1 - 5)$$

we see the set that of the expendity set to give the

$$\begin{vmatrix} 2 & 7 & 1 \\ 9 & 1 & 6 \\ 7 & 2 & 2 \\ 7 & 1 & 9 \end{vmatrix} \begin{vmatrix} 7 & 1 & 6 \\ 7 & 1 & 6 \\ 7 & 5 & 5 \end{vmatrix}$$

Which will all waveled by small subject to a trace

$$x = \frac{35}{5}(y - \frac{33}{15}) = -\frac{9}{3}$$

Note: In a Charles a exputal 84, on premodify very signature. On his whell are expect that in Cogular not and

$$\label{eq:condition} \mathcal{F}_{\rm s}^{\rm out} = \begin{cases} \tilde{r}_{\rm s} - \tilde{r}_{\rm s} = 0 & 0 & 1 & 1 & m_{\rm s} = m_{\rm s} \\ \tilde{r}_{\rm s} - \tilde{r}_{\rm s} = 0 & \text{and } S = -\frac{1}{2} & 1 & m_{\rm s} = m_{\rm s} \\ \tilde{r}_{\rm s} = c_{\rm s} - c_{\rm s} = c_{\rm s} \end{cases} \; ,$$

About window of 20% in the unknowns in Croute matrix (i.e. so unit who instead of low wind 18 , was given  $0 < t_1 - t_2 = t_3$  the  $t_4 - t_4 = t_5$  the  $t_4 + t_5$  and  $t_5$ . Thus is this is a post-ago of Cost's highest over Fig. 4.8 method on Hieropic than malling particulars for a large training at

#### 6.2.2 Gauss Seidel Method

Inches on selicity (i) was substitutioned a subspecific

$$(r_{n}^{(1)}, q_{n}^{(2)}, \dots, r_{n}^{(d)}) = r_{n}^{(d)}(r_{n}^{(d)}) \text{ and as } \vdash \text{support} \text{ the } \text{ Had, so } s_{n}^{(d)}.$$

In the section equation we also below  $\{r_i^{(k)}, r_i^{(k)}, \dots, r_i^{(k)}\}$  who behave the less than  $1 > 2^{(k)}$ .

From this bandwitted common of the  $(e^{i\phi},e^{i\phi},e^{i\phi})$  .......(if only altered on the  $e^{i\phi}$  information we complete the following of an analysis of the characters will be also defined as the object of the characters will be described as the object of the characters will be described as a section of the object of the characters of the character

Moreous an bolonywith a the Masso Ceree mailtodiconverses twis replactus . His wood method?

# 6.3 Numerical Solutions of Nonlinear Algebraic and Trans-condental Equations by Bisection, Regula-Faisi, Secant and Newton-Raphson Methods

 $\epsilon$  -solutions angle  $\pm i \eta$  work a radius by standard proven an intertwice i with i -indicated between

$$t\phi = 0$$

internación de contracto escala internación escala en mana por el film escala segunda escala en escala en escala en el mana en el mana en el mana en el mana e

Let  $\mathbf{a}$  a point of invariable enough to the solution amount viscolated might, where 0 is a factors  $\mathbf{v}$  is a property  $\mathbf{a}$  and a semi-property of  $\mathbf{a}$ .

#### 6.3.1 Roots of Algebraic Equations

of  $g_{\mu}(x)$ ,  $e^{i\phi}=\sin^2(x)$ ,  $e=e_{\mu}$ , not a solved in Eq. and the solved in cosine, and to use the matter g and the g and g

If third regularly (g, v) is  $g \in \mathcal{G}_{q}$  , we see that without care to, with generality we may law g

$$\varphi' = (-e^{i\varphi_{i+1}}, \varphi_{i})^{i+1}, \qquad e_{i}\psi_{i+1}, \dots \psi_{i} = 0$$

avino lypolytis, a con integra apparatore dideutya

- $\gamma=\gamma_{1}\gamma_{2}\gamma_{3}$  , the constraints are coefficients  $\rho_{1},\rho_{2}=\rho_{1}\omega$  (swelly) as supposed for the
- $s=s_0$  and solution is a final masses  $s_0$  (so field a collection by  $s_0$  ) and  $s_0$  also  $s_0$
- , when the explosion by  $r_{\rm c}$  are browned according to the equation for  $r_{\rm c}$  . Since
- $r=\phi_0$  and we meanwhat open equality of 1 ( or  $m(r_0)=0$  ) as which the p>0 Caginate.
- $g = F_{\rm MS}$  according to  $A_{\rm MS} \approx 10^{14}$  degree near this RA and Te moltw

 $m_{\rm multi}$  , smaller, we give a equation Ly f(c) = 0 which

$$b_{\rho})=\left(\sqrt{\sigma^{2}+\rho^{2}\sigma^{2}}\right)+\mathcal{D}_{\rho}\sigma^{2}^{2}=(1+4\sigma^{2}).$$

The equation  $V_{0}=0$  is a cred, sometimely large of the percentage  $A_{0}^{*}$  and the side of  $A_{0}^{*}$  and  $A_{0}^{*}$ 

$$f(x) = (x, -x) \in \mathbb{R}^n$$

where  $f(\cdot)$  is a lateral inequal treatment we follow one Again. We obtain  $f(\cdot) = 0$  has a restricted in Eq. ( ). As some  $f(\cdot) = 0$  has a restricted to e.g. . For a given  $f(\cdot)$  is the  $f(\cdot)$  and  $f(\cdot)$  in  $f(\cdot)$  is the  $f(\cdot)$  and  $f(\cdot)$  in  

$$\phi_{ij}(x) = \langle x, x \rangle + \langle x | \phi_{ij}(x) \rangle$$

where  $\phi_{ij}(r)$  is a reconstructive  $p \sim 1$  understoned in Eq. ( ). In the relations,

$$f(x) = g_{x}(x - x_{x}^{2}) \cdot (x - y_{x}^{2}) \cdot f(x)$$

Proceeding in this way we obtain.

$$\label{eq:problem} \varphi(r) = \varphi(r) + 2 \varphi(r) + 2 \varphi(r) + 2 \varphi(r) + 2 \varphi(r).$$

The contraction  $\Phi(t)$  is the state of  $t=\delta \psi$  vanishes when v is some of the action  $x_1, x_2, x_3$ 

- \* electric a patron control level note from a root; for the Hey value different from any of E quantifies E ,  $A_{i}$ ,  $A_{j}$ ,  $A_{j}$ ,  $A_{j}$  and sold some E ight are of the Heymans, and Levelons  $A_{i}$  can be some of the that value of  $A_{i}$ .
- in the of the propositions of the constitution  $a_i$ ,  $a_i$ ,  $a_j$ ,  $a_j$  may be equal,  $a_i$ ,  $a_j$  constitution of the sequence of the  $a_i$  of t
- $x_0 \in \mathbb{R}^{2n} \mapsto \mu \operatorname{dist} \operatorname{with} (x_0) \cdot \operatorname{def} \operatorname{dist} \operatorname{dist} \operatorname{gradients} \operatorname{dist} \operatorname{dist} \operatorname{dist}$

Such that follows the equation with the most decreased according to the second property  $-\infty$ , we shall also white  $-\infty$  and  $-\infty$  and  $-\infty$  are success. In the tension as a subject to a second or  $-\infty$ .

$$(r-s) = (2\pi i) \quad (r-s) = \alpha_1 \cdot (r i) (g - g)^2 = 1/2$$

Figures from a light of energy was the inverse possibility of experimental expectation for the  $(y_1, \dots, y_n)$  and the production of the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the production of the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the production of the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the production of the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the production of the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the production of the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  and  $(y_1, \dots, y_n)$  are the  $(y_1, \dots, y_n)$  an

$$\tilde{\gamma}^{p}(-1)(b-2)^{2}+i\gamma\left(\left((-c)^{2}-c^{2}|c|^{2}+c^{2}|c|^{2}+c^{2}\right)\right)....$$

As we assumed that we factors to must be for exercised by Lagrangian through the property of the formula of the particles of the second x.

6. We now show that it denotes the interest is setting to prove that it is a set of the -5 is a specifically

#### Example:

You by the state of the  $184^{\circ}$  is  $2^{\circ}$  and  $3^{\circ}$  the  $3^{\circ}$  and  $3^{\circ}$  of the state of  $3^{\circ}$  is  $\sqrt{2}$ .

#### Salution

Since  $2 + \sqrt{3}$  is a form we know that  $2 + \sqrt{3}$  is also in this support establishing the partial consequence in the quadratic factor  $2 + 2 \sqrt{3} + 3$ .

 $\Delta (c) = C a^2 + 12 a^2 + 3 a b^2 + 2 a + 3 a + 4 a + 4) \left( 3 a^2 + 3 \right) \left( 4 a + 3 \right)$ 

Тепростою не пуска серамен еу дон.

$$0 = \{(b, b, i) \mid b + b = 0\}$$

thundle bosons 
$$-\frac{1}{5}, -\frac{J}{2} \mapsto \sqrt{J_1}S + \sqrt{S} \equiv 0$$

To lleadmind the leading of some of the motors' an equation this indicates assert a scalability of the indicates the high of the indicates are presented by the indicates and indicates are presented by the indicates are p

- 1. It decomples we transitive, the equation is smooth at least two decomples  $-\chi^2 + 2\chi + 1 + 6$  satisfy those expectations.
- 2. It decails in the improve a decrease, an adoptions go will integer points  $a_i \mapsto \operatorname{id} powers$  as  $a_i = \operatorname{id} powers$  and  $a_i = \operatorname{id} powers$
- 2. If we equind that party even bowe distincted the coefficients are all of the same sign that of permitting or methods (number equation  $2x^2 + 5x^2 + x^2 + x + 3x^2 + x + 4x + 3x^2 + x +$
- 1. In this performance is a possible of the conditional performance and the wine significant winterpart of the executive 0, therefore equations  $x \in \mathbb{R}^n$  is  $x^2 = x^2$ . It is some softment we set x = 0.

A phonorogologic substancing coopii allie Teoremo Trancal so de lacionis e i sance Descotos. Businos sus

#### 6.3.2 Descarte's Rule of Signs

Appropriate for a small nation appeals are realistically energies that jos of non-info problems of the formation appeals are the extension of 
no. Indirebent) en instaka taka kemumaa meginebangesi (約). Isoo nomborel eshregarran ata kamumparansan pherusan (中)

#### Example

Consider the could by  $x^0 + 6x^1 + x^2 + 7x + 2 = 0$ .

#### Salution:

... | не в ден на на местопровой в ротоного изотране его на постопров (no rock) | Адмі пяжу на местопо податув постором и предней на предоставляться в роского постором и на форе the given | одржуванием в предней по податув постопровой и предней на пред

#### രുള്ള Numerical Methods for Root Finding

We shall bludy so municipaling in an all all of left the conduct () what left in the floor (10.00) hall g , we say that f(x) = 0.

- Risyction Volability
- Bag in Hast Marroo
- S. Syron Metas.
- Lucino APA e non o Malaband.

#### 6.3.3.1 Bisaction Method

This motines is passed by the internet bits within the activities, states that the interior surpressionables the ways are designed to the earliest surpression and the earliest surpressionable that the earliest surpression and the earliest surpressi

 $\log(N_0)$  we require the high corposition (see Figure Editor). Then the lamited between all  $e^{-1/4}$  of  $e^{-1/4}$  in approximate value are given by  $e^{-1}$  ( $e^{-1/4}$ ).

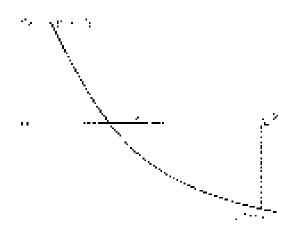
Taylor 0, we conduce that  $y_i$  is a rout of J is a paint  $(x_i)_i = 0$ , concress the initial terminary, and size personal order and not represent  $(x_i)_i = 0$ , where  $(x_i)_i = 0$  is the  $(x_i)_i = 0$ . We describe the new  $(x_i)_i = 0$  of whose  $(x_i)_i = 0$ .

As solding in our precise  $y_i, y_j \in \mathbb{N}$  than the minor in the sweety will be engineer to sold our ordinal constraints of the engineer to the ordinal control of the engineer of the engin

We then that 
$$\frac{10^{-3}}{z^2}$$
 . As which also should with the  $\frac{\exp\left(\frac{12z-y^2}{z}\right)}{z/\sqrt{2}}$ .

In some k(t) gives the number of the k(t) and k(t) in k(t) for an accuracy t

the meltions are easily an group on this contract



The composity while for a composition of  $\exp(-\frac{|v|+p_0}{2})$  to more particular,  $v_{\text{opt}} = \frac{v_0 + p_0}{2}$ .

#### Expression

. Distlikated too state state and  $(a) = a^{a} - a - 1 = a$ .

#### Schriften:

Grown 3 ) is not that H(2) is positive to that lies retween 1 and 2 and that slot is well to  $x = x \delta$ 

Then  $f_{\rm tot} = \frac{e^2}{g} + \frac{Q}{2} = \frac{f_0}{g}$  which is consider larger the foreign service of each to and we obtain

x=0.00 Lord = 1.25 c=0.00 ( ) = 1.854 tand the equive Wetherstone conclude that engages Lebess (1.25 c=0.00) as Laplace Laplace 1.575.

The entering a supported and the engaged operations are  $x_0 = 1.025$  to  $x_0 = 0.025$  to  $x_0 = 0.025$  to

#### 43.3.3 Regula: Falsi Method

$$|z_2| = \frac{\sqrt{|v_1 - v_2 v_2|}}{\sqrt{1 + v_2}}$$

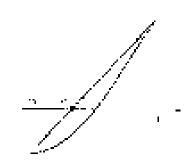
armoniga eigly

$$z_{p,q} = -\frac{(\underline{t}, \mathbf{x}_{p,q} + \underline{t}_{q,q})}{(\underline{t} - \underline{t}_{q,q})} \lambda_{p}$$

Swiph on you be the period training a medical region of the  $Q_{ij}$  and  $Q_{ij}$  are the region of the  $Q_{ij}$  and  $Q_{ij}$  are

Other less its at the increase skill entries where  $\lambda_{ij}$  and  $\lambda_{ij}$  are considered as

20 ), the vector of Lemma corporate and which with the first f(x,y) and f(x,y) for f(x,y) and

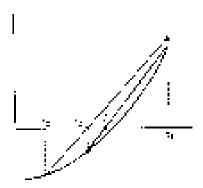


ിച്ചുള്ള പ്രതിനാനം. red aced <sub>as a</sub> replaced from And Inclination Regulation rules and the new variety of minorization of a gradual ceres

#### This is illustrated graphically as follows:

The property some interface of provides the relative for the back, where the relative for the matter in the source of the source in the source

gen Brazilian and Angula Loro in vivue size (ill kilant biblio transported and personal transported and the Angula Brazilian B



#### 6333SegantMethod

[19-5]e := Intrinct proceeds similarly a Day 19-Fals inclination has some θ is it as a matured we sature, guessivation in the difference of at ξηξύξες μέσο not be required at all γ x sign of the atomic day it between that the most proceed in proceed is consistent equation as Taylor-Form molecular.

$$\mathbf{y}_{\underline{k}} = \begin{bmatrix} \hat{\mathbf{y}}_{1}^{*} & \hat{\mathbf{y}}_{1}^{*} \\ \hat{\mathbf{y}}_{1}^{*} & \hat{\mathbf{y}} \end{bmatrix}$$

graduate parameter 
$$z_N = -\frac{2 |y_{i-1}|}{|z_i|} \frac{-1}{|z_{i-1}|} z_0$$

in Section behalf a get in value of a social red to proceed in The has been only as weaking a Section of a Section of the sec

$$|x|_{\tau} = \frac{\hat{\eta}_{\sigma_{1}} - \hat{\eta}_{1} a}{\hat{\eta}_{1} - \hat{\eta}_{2}}$$

 $\exp(k_0/T) = \frac{1}{2}$  which the exponence hold is the converged sublique of massless grass that do not regard. The grad-Print method, which uses the out of the offered subliques.

#### 6.3.3.4 Newton-Raphson Method

This memodial generally uses the market the result obtained by (x,y) the area countries to (x,y) and an approximate rect of (x') and the (x',y'). Note the context is (x,y) and (x,y') is the (x',y') and (x',y') are some set (x,y').

$$\rho_{T_{i}} = \rho_{T_{i}} = \operatorname{cr}(\chi_{i}) + \frac{\rho_{i}^{T_{i}}}{\rho_{i}} P(\chi_{i}) + 0.$$

we getting through the manufacture of the second constraints with the  $J = J / (\lambda t) = J$ 

which gives 
$$N = \frac{10 r_0 V}{10 (v_0)}$$

A borner about a majoral basis of the transfer given by x , where

$$x=x_1+y_2+y_4=\dots = \frac{y_1+y_2}{y_1^2+y_2}$$

by constant about a majoric and given by  $r_2/r_2, \quad r_{n+1}$ 

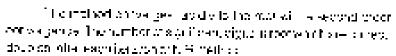
$$\mathbf{a}_{i,j} = -\mathbf{r}_{ij} + \frac{\hat{A}(b_{ij})}{\hat{A}(b_{ij})} \qquad \qquad \dots \hat{A}_{ij}^{(i)}$$

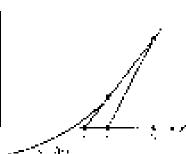
which s Newton Paphage Typing g.

$$\Xi_{i,j} = m \frac{1}{2} - 2 \frac{f'(y)}{f''(y)}$$
 (6)

For all the Newton Repligon process has a reason for Jerical automotive processes.

Detries to be in Navis -Paghson method along an  $\chi$  gape is above a pair of  $p_{ij}$  of and hope in a transaction of the iniqual to when it is a set of both and an expansion of the value of the transaction of the result of th





Following walls of Continuity Sewton Bachson by Anvelopping ungoing with the Mawker-Section interests equally the Legency  $\{u_{ij}\}$  problem.

- 2. The inverse sould be a 1. is the rectangle at it.  $\frac{dy}{dt} = \frac{1}{dt}$  , d = 0

$$\mu_{j,k} = \frac{1}{3} \gamma_{j,k} (S + j, y_{j,k}^{2})^{k}$$

 $\mathbb{R} = \mathbb{T} \oplus \partial^{n}$  (set the piece in the n is next at coupling  $Q_{i}(x) = x^{i} + y^{i} + y^{i} + y^{i}$ 

$$u_{p,n} = \frac{(p-1)p^2_p - 2n}{4n^2}$$

Note: the order of Fixed on, Require  $S(k) \in A$  Series to Monod one where the energy  $M_{\rm P}$ , we are given as the

<u>। इ. स.</u>	Malhor	Direct			
I	Bi⊶ tçı	I			
	. 1995elatiaki	1			
<u>J</u> .	Posoni Mere i I	1.02			
	Newton Aphson	2			

# 6.4 Numerical Integration (Quadrature) by Trapezoidal and Simpson's Rules

The games program is interesting equal or the object as detected. Sweets were that the first per is  $(v_i,v_j)$ ,  here  $(v_i,v_j)$  is not grown as a substitution of the  $(v_i,v_j)$  and  $(v_i,v_j$ 

$$r = \left[\frac{\sigma}{2}g^2\right] \qquad \qquad ...$$

As in the base of information different and invertee accommunity parameterpolating is for an elegated in the decided of an engineering as a larger instruction and of the methods recognized as a formation to multiple and the channel depending the contract of the problems as seen

Let m be m ,  $\sigma_{i}$  ,  $\sigma_{i}$  and  $\sigma_{i}$   $\phi$  . The i contributes i is the i such that

$$\mathbf{x} = \mathbf{x}_0 + \mathbf{x}_1 \times \mathbf{x}_2 + \dots + \mathbf{x}_n = \mathbf{0}.$$

Centra

$$_{\rm M}$$
 ge, the integral topon esc. ( )  $\sim 1000$  eV:

A some morning  $g(\phi)$  between the entered Difference for rate  $(\phi+\phi)$  for  $\phi$ 

$$(-\int_{\mathbb{R}^{2}} \int_{\mathbb{R}^{2}} |y_{i}| + \int_{\mathbb{R}^{2}} dy_{i} \cdot \int_{\mathbb{R}^{2}} \frac{dy_{i}}{y_{i}} \frac{dy_{i}}{y_{i}} = \frac{(y_{i}x_{i}^{2} + (y_{i}^{2}))^{2} - 2}{y_{i}^{2}} (x_{i}^{2}y_{i}^{2} + \dots + y_{i}^{2})$$

 $\{i_{(k+1)}, x_{k+1}, x_{k+1}, x_{k+1}, x_{k+1}, x_{k+1}\}$  and hence , a grown is stail between the

$$S \int_{0}^{\infty} \left[ \chi_{2} + \mu^{2} \gamma g_{ij} + \frac{\mu(0, +1)}{3} \Delta^{2} \chi_{2} + \frac{\mu(0, +1)(\mu + 2)}{3} \Delta^{2} \chi_{2}^{2} \right] = \left[ i \Delta \delta \right]$$

and generalization

$$\int_{W}^{\infty} \left[ g dx + \alpha dx \right]_{1} = \frac{1}{2} \Delta g dy = \frac{4 \left( 2 \pi - g \right)}{2} \Delta^{2} \left( g - \frac{4 \left( 6 - 2 \right)^{2}}{24} + \frac{2}{3} \right)_{y} = 1 \dots .... \right]$$

This is an explosion with multiple section of flatters using a construction of the following section and the section and the section are proportional to the flatter of the flatter of the section and the se

The integraph A describes  $\Delta_{A_1} \otimes_{A_2} A_{A_3} \otimes_{A_4} A_{A_5} \otimes_{A_5}  

$$\begin{array}{c|c} \hline \lambda_0 & D_1 \\ \hline \lambda_1 & \nu_1 \\ \hline \lambda_2 & \nu_2 \\ \hline -1^{N_1} & 1 \end{array} \Big] \times ^{N_2} \Big[ \times ^{N_2} \Big] \\ = \frac{1}{N_1} \left[ \frac{1}{N_2} \right] \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \right] \right] + \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \right] \right] + \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \right] \right] + \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \right] \right] + \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \left[ \frac{1}{N_2} \right] \right] + \frac{1}{N_2} \left[ \frac{1}{$$

$$\begin{aligned} \Delta w_{ij} &= (p_{ij} - p_{ij}) \\ \Delta y_{ij} &= (p_{ij} - p_{ij}) \\ \Delta (p_{ij} - p_{ij}) &= 2(p_{ij} - p_{ij}) \\ \Delta (p_{ij} - p_{ij}) &= 2(p_{ij} - p_{ij}) \end{aligned}$$

21.3

#### 6.4.1 Trapezoidal Bula

Setting night of the properties and differences it ignorance the first will be complight with so obtain

$$\int_{W}^{s} g(x) = \left| x_{1} y_{1} + \frac{1}{2} N_{1} y_{1} \right| = \left| x_{1} - \frac{s}{2} (s - s_{1}) \right| = \frac{N}{2} \left| y_{2} - y_{2} \right| \qquad (10)$$

First Horse the set  $[r]:=[1,\infty]$  declares a right

$$\frac{\gamma_2}{m} |c(b)| = \frac{d}{d} |\varphi| + |\varphi_2|^2 \tag{6}$$

and spion. So the solutions  $\{x_{i,j}, x_{i,j}^{*}\}$  we have

combining of these symmetrics, we call in  $t \in \mathbb{R}_{+}^{n}$ 

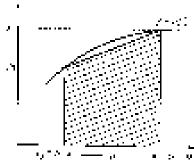
$$\int_{N}^{p} p \nabla k \, \, \, = \, \frac{p}{2} p \, q + 2 p \, q + 2 \, p \, \, \, + \, p \, \, \, \, \, (1 + p \, q) \, \, \, .$$

vilian siktovi valtapeco od ota

The proof of Catagori's on Sept Lie blink in xit, a purpose  $y=\eta y$  when proof which and three principle points  $[x_0,y_1]$  and  $[x_0,y_1]$  (i.e. which  $y(y_1,y_2),\dots,y_{n+1}$  and  $[y_n,y_n]$ 

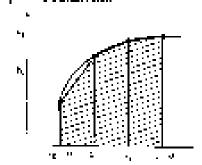
The algorithm of the convey  $y = \delta x$  . The algorithms of relative  $x_0$  and the algorithm of the approximately converted to the algorithms  $x_0$ . The peculiar sector  $y_0$ .

5lmula Trapazolos, ദ്വേള



Ghadhní Area i a líosca shíth á reiliúin a  $\frac{\hbar}{2} \tilde{H}_{\rm c} (u)$ 

## Compound Trapacaidal Rule liable 4 pts and 3 intervalse:



O which find a little of Arra of ) is appeared by 
$$\frac{d}{d} f(\mathbf{v}) \mathcal{Q}_0$$

## 6.4.2 Simpton's Rides

#### 64.21 Simpson's 1/5 (eds.

The rule and single partial  $g(x) \ge \pi$  grows formula,  $g_{x} = g(x)$  is curve by g(x) are of second degrees object as object as a subsect. We have good

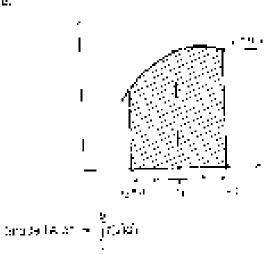
$$\begin{aligned} & \frac{\partial}{\partial t} \left[ 2x + 2h \left[ p_{1} - 2h t_{1} + \frac{1}{6} \lambda^{2} h_{0} \right] \right] \\ & = \frac{\partial}{\partial t} \left[ p_{1} + \left( p_{1} - p_{0} \right) + \frac{1}{6} (p_{2} - 2p_{1} - p_{0}) \right] \\ & = \frac{1}{6} \left[ h_{0} + 2h_{1} - h_{0} \right] \\ & = \frac{1}{6} \left[ h_{0} + 2h_{1} - h_{0} \right] \\ & = \frac{1}{6} \left[ h_{0} + 2h_{1} - h_{0} \right] \\ & = \frac{1}{6} \left[ h_{0} + 2h_{1} - h_{0} \right] \\ & = \frac{1}{6} \left[ h_{0} + 2h_{1} - h_{0} \right] \end{aligned}$$
 Similarly 
$$= \frac{1}{6} \left[ h_{0} + 2h_{1} - h_{0} \right]$$
 and the  $h_{0}$ 

والأحوال والمراجع والمراجع والمراجع

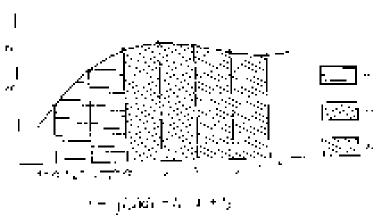
$$\int\limits_{\Omega} g(y) \, dy = \int\limits_{\Omega} \frac{dy}{dy} \, \left( -1.4 (y) + u_{N} + V_{N} + \dots + y, \right) + 2 \left( V_{N} + y, y + \dots + V_{N} + 2^{N} \right) y$$

which to know that "Simplean's 170 rule" or only vi\*8 mpsor/s rule". It should be in a +4 lact are into the prostite. This are of the offsterior specialism cumpons to 19 markets a width  $^{\rm h}$ .

## Sample Simpenn's Ruic.



Compound Simpann's Role: (7-14-2001-07-U) | HIVA 51



#### 64.22 Simpson's sin Auto

Selfin) with a generality map we procedule wild like the eighborhood with the constant a and a and a

$$\begin{split} & = \frac{3n}{2} p_1 + \frac{3}{2} p_2 + \frac{3}{2} p_3 + \frac{3}{4} 2 p_3 + \frac{1}{4} 2 p_4 + \frac{1}{2} p_4 p_5 \\ & = \frac{3n}{2} p_4 + \frac{3}{2} (n_1 - n_1) n_4 (n_3 - n_4 - p_4) - \frac{1}{2} (n_4 - n_4 + p_5 - p_5) \\ & = \frac{3n}{2} p_4 + 3p_4 + 3p_5 + p_6 \\ & = \frac{3n}{2} (n_3 - n_4) p_4 + 3p_5 + p_6 \end{split}$$

ondistratification (professar webott a

$$\frac{1}{t_0} 2 \gamma' r = \frac{R^4}{2} (2\gamma - 3 k_1 + 3 k_2 + k_3) + (k_3 + 3 k_2 + k_3) + (k_4 + k_4) + \cdots + (k_{12} - r_{21} + r_{22} + r_{23}) + (k_4)$$

$$\int\limits_{S^{2}}^{S^{2}} g \mathcal{C}_{n} = \frac{3^{6}}{5} \left( g_{2} + \delta g_{1} + 3g_{2} + 3g_{3} + 3g_{3} + 3g_{3} + 2g_{2} + 2g_{3} + 2g_{3} + 4g_{3} + 4g_{3} + 4g_{3} \right)$$

The rule on latt Simple and SW rules, is not so as a section of the rule rule.

#### Example:

 $\frac{1-\sigma^2 \log x}{(1-s)^2} = \int_0^1 \frac{1}{1-s} ds \ \, \text{convert to three beat in a parameter <math>x \in \mathbb{R}(n)$  in the wind  $x \in \mathbb{R}(n)$  and  $x \in \mathbb{R}(n)$  on the first trial are parameter.

#### Seluction:

We show the cuestion by extend a fraggerontal and 8 impacts rules with  $P = C_{\rm co}$  and P = 0 and P = 0 with P = 0 and P = 0 with P = 0 and P = 0.

$$\frac{1}{y} \cdot \frac{y}{1 - y} = \frac{1}{1000} \left[ \frac{111}{24967} \cdot \frac{10}{96} \right]$$

Tesperoidal rule gives.

$$A = -\frac{1}{2}[1.0000 + 2000000 + 0.8] = 0.7364$$

ib! Simpson's rijle gives:

$$\frac{1}{6} \left[ 1.00001 + 1 (0.0007) + 1.6 \right] = 3.0545$$

More than the exposure was for the smaller haby analytical marginum in which

$$f = \frac{1}{5} \frac{1}{16} ds = \left[ \exp \left( (1/2) \right) \right]_{0} + \log J = 0.023 ;$$

Upon gS appears the scotton in the amount of the contrast contrast throughout the supercision of  $\mathbb{R}_2$ 

## 6.4.3 Truncation Error Formulae for Trapezotdal and Simpson's Rule

charge the stop give live in a hardness.

to  $\rho(g_0 g_2)$  , which is minorate mole inspection by the differential values (xy)

$$\rho_{ij} = -\frac{e^{\frac{i\pi i}{2}}}{2\pi i} f^{*}(E)$$

Notice that is a cost of the form  $\hat{x}^{ij}_{ij}$  there is

$$Y_{\mathcal{C}(Tik)} = -\frac{n^{\frac{1}{2}}}{10} N_{\mathcal{C}}^{(n)}(\xi)$$

To astropularly, councility of since independent use is given by

$$\begin{aligned} T_{\text{Circles}} &= - m n e^{-\frac{i k_{\text{Circles}}}{4 S} \delta^{(1)} \frac{k_{\text{Circles}}}{2} \\ &= \frac{n^2}{4 S} m_{\text{Circles}} \delta^{(2)} \delta^{(2)} , & \text{where } \epsilon \in \mathbb{Q}^{(2)} \delta_{\text{Circles}} \delta^{(2)} \delta^{($$

Has Compastie rain Hawkiim Italy.

$$\begin{aligned} |\mathcal{A}_{i}|_{[0,T]} &= \max_{\substack{i \in \mathcal{A}_{i} \in \mathcal{A}_{i} \\ i \in \mathcal{A}_{i}}} \frac{\partial}{\partial x_{i}} \mathcal{B}_{i} \overset{\text{def}}{\otimes x_{i}} \frac{\partial}{\partial x_{i}} \\ &= \frac{\lambda^{3}}{42} \mathcal{B}_{i} (\text{tot} x_{i})^{2} (24) \end{aligned} \quad \text{where, } x_{i} \in \mathcal{A}_{i} \subseteq \mathcal{A}_{i}$$

) is the State state of the sum of the state of the stat

$$\xi = -\frac{3^2}{2\pi} \partial^2(g)$$

For an imposite Bingspire the win by imposels, the increasing committee to  $\alpha$  variety

$$\tau_{g_{\overline{Q}}(p_{\overline{Q}})} = -\frac{i \overline{r}}{9 C} \overline{r}^{\alpha}(\overline{p}) (0)$$

where  $N_{\rm p}$  is a important particle (1969) a

Smue.

$$N_{1}=\frac{N}{2}$$

۹.

$$T_{20000} = -\frac{e^{2\pi i t}e^{2\pi}}{20022} m_0 25.$$

The passeure frames, on  $\Theta(x)$  is the filter through the expression with V(x)

$$\begin{aligned} \left| \left| \frac{1}{n} \right|_{\text{polarize}} &= \left| \frac{n^2}{30} \left| \frac{n^2}{30} \left| \frac{n^2}{30} \right| \right| \\ &= \frac{n^2}{30} \operatorname{ngs}[n \left( \frac{n}{3} \right)] \end{aligned} \qquad \qquad \text{App.} \quad n_{\text{polarize}} &= 202.2 \, n_{\text{polarize}} \end{aligned}$$

The absolute during the remaind for composite \$6 no stricture burnly intervals in price by

$$\begin{split} \left| T_{n,n,n,n} = \exp \left[ -\frac{e^{2}}{20} \left( \frac{N}{N} \right) e^{2} \left( \frac{N}{N} \right) \right] = \frac{N^{2}}{600} \left[ \frac{N_{1}}{2} \right] e^{-4N} \left[ \frac{N_{1}}{N} \right] \\ &= \frac{e^{2}}{120} \left[ N(\max | P_{1}(0)) \right] \qquad \qquad \text{where in a SSS}_{1}, \end{split}$$

The those in miner  $N=(e-b0^{\circ})$  where N=e is extreme limits of neglector rate  $n_i=n_{ij}+1$  (where  $N_i$  is the number of particles of their egistion), where  $N_i$  is not because and the interesting the first state  $N_i$  is small supportional to  $n_i$  in  $N_$ 

#### Important Note:

- The property of  $d^2 r d^2 \phi$  is the expect restriction of the integrating appropriate ratio  $d^2 r d^2 \phi$  .
- $^{2}$  . We have the disconsisting property and the green  $_{\mathrm{c}}$

## 6.5 Numerical Solution of Ordinary Differential Equations

#### 6.9.1 Introduction

Analytight chooses the bright specific caper my to a limited caper of the entail constraint. Fire party or creation on which year specific may be absentiable in the extent to are one exhibition which are one eigenvalues on the entail incomes the entail respect to the entail incomes and the entail entail even are accommon to the entail respect to the entail entails and the entails are accommodated and accommodated accommodated and accommodated accommodated and accommodated accommodated and accommodated accommodated and acco

is turned of the qualitative energy policies. The set of properties or the  $\omega_0$  and  $\omega_0$  allows of the mass  $\omega_0$ 

$$\frac{\partial g}{\partial x} = \beta(r, y) \text{ of vort } \psi(r, y) + \psi_0$$
 (6)

There may donated a rulid significant places of a train which in values of contractions of the policy outsides on a second value of a and is that reflect of Popperand Tasks region. Economics there exist these of the Tangorisality to the Alberta form of the second places of the relationship of the electronic of the second policy of the p

Therefore Hunga-Killus motification used for compullingly the lateration angle observal existing of the and Advance People of the Notice may be applied to the large close a Hunga-described asset to select the Hunga-described Expression Expression Flags as the Hunga-described Expression Flags and the Hunga-described Express

The intelligence of the constraints of the particular such and the interval of the intelligence of the particular of the constraints of the const

- 1. Bully Medical
- S. Michigal Edges Malesty
- $3 = 50 \, \mathrm{ngc}$  such MHT to we worth (in He (i) become single knowledged).

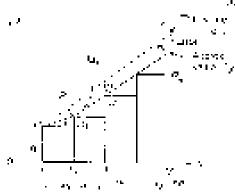
#### 63.2 Euler's Method

Sensitive expedien, 
$$\frac{\partial x}{\partial x} = x^2 t_1 x_2^2$$

0 % The Superfix expanse stability in Theory (et al., given both  $n \in \mathbb{N}$  ) is some substituting a second of the product of any  $n \in \mathrm{cons}(C)$  is convex.

Let a finducial rich a coincast holds of width facts  $f_2=$  contact his rais, and then a some letter  $f_3=$  be the Lypponius  $f_3=$  and then the Lypponius  $f_3=$  and then

$$\begin{aligned} \mathcal{F} &= \frac{1}{2} \left( F_1 + E_1 + E_1 e_2 \right) \\ &= \frac{1}{2} \left( F_1 + F_2 + F_2 e_2 \right) \end{aligned}$$



$$= \left\| g_0 - t_0 \right\| \frac{\partial g^2}{\partial x} \Big|_{g}$$

$$= (y_0 + f) f(x_0, y_0)$$

, as with the relative of set non-orbit and poles and who supported by the fitte orbit electrological fit  $P(p_n) = 20 \lesssim 1$  for regressing this process without well also each or acquisition on  $M_n \cap M_n$  send to

$$y_{n,j} := (3x_0 + (x_0 - 30, x_{n+1}))$$

In panasal were 4y Wife.

$$\varphi_{i,j}:=\{y_i\in \pi_i(h_i,y_i)$$

His je Pararis method (4 finaling an approximate so the -0.1%

Obs. In Title is mortion, we up a partitible the inter-of-solution partition as gent in the continuous for the sequence of the filters, or feed a firmal, the east is bound to be fluid significant. We sequence of the filters of feed of the fluid of the continuous fluid in the curve of a number of the continuous fluid in the curve of a number of the continuous fluid of the first of the fluid of

#### er annole:

Upry Firsts Heller J. The an approximate value of p is measurable to r=1, given that ds dt=r+r goes t=1 when r>0

#### Sedundom:

We take n=1 Jan  $\beta > 0$  . We consider the small The conductive has the consider an analysis of A in we

<b>*</b> /	x− <del>p = ₫;</del> es i	nato <u>i Diligorni</u> a	-
' or <del>20</del> 5,	1 4.	$ (0) = 0.77 \cdot 301 =$	
0.11 (0)	1.27	1.10 ( 0.0) 20 ( 1	
آ ع.دا برين	143	$1.24 \pm 0.1(42)$	1 1
$I_{0.5-1.88}$	·r	((3) + (1) + (1) + 2) =	DV.
$0.4 \pm 0.0$	196	1.88 (0.00 80)	
n.e   1.72	ا ۲.۷ ا	(1/4 ± 11/12%) v	
C.5 1 84	3.51	- <b>134</b> (307/2015	•29
2.19	1.35	2.144 0.02 990	·- I
50] r8	7.24	g 45 × 0 1, 450 i	
gas Lean	371	7 281 0 T 10	- 1
Т. <u>Б.Б</u> .ш	ı <u>—</u>		

Inuc аныны / Акс портока меранорган х SirSiru н 🗟 🤇

**Ob** with this exercised, she take with a only map (its exacts a 0 ) on  $a_1 a_2 = 1/2$ 

$$\begin{aligned} y &= \frac{1}{2} (47 - 7) - 4 \\ 244 &= \frac{1}{2} (3.44) \end{aligned}$$

of electric about the factor 0.16 is the above support, near we discontinuise, the policy probability the considerability fractably that the expense of daught the about the policy political 0.16 for the first policy 0.16 for a considerability of a considerability of the 0.16 for all the 0.16 for 0.16 for 0.16 for a considerability of the 0.16 for 0.16 f

#### Example:

Civen 
$$\frac{dk}{dt} = \frac{\lambda - \epsilon}{k + \epsilon}$$
 with sub-close of the  $\lambda - 1$  down 1000  $k - 1$  . On the  $t - 0$  and  $t - 0$ 

#### Salution:

We observe the process (0, first) into the started convenience to the  $\frac{d_1 + g}{d_1} = \frac{d_2}{d_1} = \frac{d_2}{d_1} + \delta$  for the vertical conditions are a marginal scalar latter.

$\left  \int_{\Omega(0,T,2\lambda(t))}^{T} dt \right $	y = 0 <del>7/19</del>	o <del>lo e i</del> lescap <mark>i res</mark> eri
1,000 ETZP0	1.511.	7,000 (16) 0000 - 116)***
0.021 170410	High II	1000040200100000000010000
PP4   1 0002	0.721	1.00e14   0.074(9 <b>26</b> ) = 1.00.77
0.12 106.77	188 13	376/7=1332036( 1 07 <u>51</u>
1.0756   1.0756   1	0.532	.0750   0704 <b>802</b> 1   1,987-9
7.50 <u>  1.561</u> 79		,

be seen or equivalent suppressional equation of  $\rho = 10.325$ 

## 6.5.3 Modified Euler's Mathed

$$w_{i,k} = \psi_i + \alpha_i \psi_{i,k-\frac{1}{2},k}$$

In Bookwally Euler's methods 
$$(x_{i,j} + y_i + h) \log_{1000(i,j)}$$

A the eriod motive where t<sub>i</sub> is opening in HS and idlied the concept open on a color so input the log So Far sward Later's net by sorth might motive two by Later's net by sorth is instructional with Later's net by sorth is respectively on the specific of the evaluation.

 $\texttt{P.2608} \texttt{ward}(\texttt{Eulery} \texttt{r.ein}(\texttt{d}, \texttt{weiner}), \texttt{preserve}(\texttt{a.s.elepsy}(\texttt{Prese}_{\texttt{d}}, \texttt{Euler}(\texttt{b.n.e.}))) \texttt{s.ein}(\texttt{a.s.elepsy}(\texttt{preserve}(\texttt{d.s.e.})))$ 

#### Example:

Using Basileery Lucifo MeJ by the consequentian set eight as we midding to x=6 ), given to direct x=0 and y=0 when y=0, and separate x=0.

$$\begin{split} \dot{\phi}_{i,1} &= \mathcal{F} + \mathcal{F} \Delta z_i + z_{i+1} + \\ \dot{\phi}_{i,2} &= \mathcal{F} + \dot{\phi}_{i,1} + z_{i+1} , \end{split}$$

#### Salumon;

See Fig. ( 
$$y_{+1} = x_0 q_0 = y_{-1} = \frac{y_0 + y_{-1}}{x_0}$$

State the cultural or selections in some

 $80^\circ$  via protocolarie volto of yield,  $\omega \approx 8.9 \pm 1.5 \pm 0.3$ 

For each triangular transfer with a service of the engine of the energy probability of the energy o

The gravitings of Backwerp Lucrottiehours is assuming Paplyward Fullers method or more stable above on Later  $\alpha$ , enlarge.

A near region of the order of any single manifer and officers in the deed many  $\leftrightarrow$  contributions of  $f_{\rm eff}$  or mattrips  $f_{\rm eff}$ .

#### துத்த இ<sub>ung</sub>e-Xutla Method

The Taylor and continued given by a minor of occurrence of the first of the production of the first of the production of the production of the first 
The Califf larger Runge Runger late on its mast community tixed and its extractional fits at featings Buds' the safety substitute but a medical

whicking rule formulary the constraint of year segment of the interest in the R args. Substitute from the R

$$\frac{2^{\alpha}}{2^{\alpha}} = -4(2, 2), \quad g_{0,1} g_{0,2} = g_{0} \, (4.3 \times 1.5 \pm 0.5)$$

Coarding processingly

$$\begin{aligned} & \mathbf{v} &= [0] \mathbf{v}_0(\mathbf{v}_0) \\ & \mathbf{v}_0 &= [0] \left[ \mathbf{v}_0 + \frac{1}{2} \mathbf{v}_0 \mathbf{v}_0 + \frac{1}{2} \mathbf{v}_0 \right] \\ & \mathbf{v}_0 &= [N] \left[ \mathbf{v}_0 + \frac{1}{2} \mathbf{v}_0 \mathbf{v}_0 + \frac{1}{2} \mathbf{v}_0 \right] \\ & \mathbf{v}_0 &= [N] \mathbf{v}_0 + \frac{1}{2} \mathbf{v}_0 \mathbf{v}_0 + \frac{1}{2} \mathbf{v}_0 \right] \\ & \mathbf{v}_0 &= [N] \mathbf{v}_0 + 2 \mathbf{v}_0 + 2 \mathbf{v}_0 \end{aligned}$$

т:.

anale compute

placements by the main i + 1 force of  $k \in \mathbb{N}$  ,  $\{j, a, i \mid k_i\}$ 

 $a_{\rm BS}$  One of the advantages of financial periods is that periods are period exponential d ferential galaxies in income the second continuous.

#### Example:

. A poly Prinça kuma routin arcenin ervent ranna an papirkar kia valua o ra ese i si e 0.3 pieca dist. Tipolo e cin Mana i e i l'ese i si i f

#### Salutions

$$\begin{aligned} \cos \delta & \left( \frac{1}{2} + 0 \right) \phi = 0, \ \delta = 0, \ \delta = 0, \ \delta = 0, \\ & \sin \phi = 0, \ \delta = 0, \ \delta = 0, \ \delta = 0, \\ & \left( \frac{1}{2} + \frac{1}{2} h_{1} \phi_{1} + \frac{1}{2} h_{2} \right) + \phi \phi = 0, \ \delta =$$

$$\begin{aligned} \mathbf{v} &= \frac{1}{8}(\beta_1 + 2k_3 + 2k_3 - k_1) \\ &= \frac{1}{8}(0.2000 + 0.1900 + 0.4880 + 0.2885) \\ &= \frac{1}{8}(0.2000 + 0.1900 + 0.4880 + 0.2885) \\ &= \frac{1}{8}(0.2000 + 0.1900 + 0.4880 + 0.2885) \\ &= \frac{1}{8}(0.2000 + 0.1900 + 0.4880 + 0.2885) \\ &= \frac{1}{8}(0.2000 + 0.1900 + 0.4880 + 0.2885) \\ &= \frac{1}{8}(0.2000 + 0.1900 + 0.4880 + 0.2885) \\ &= \frac{1}{8}(0.2000 + 0.1900 + 0.4880 + 0.2885) \end{aligned}$$

From the reputed approximately group  $g_{\rm c}$  , page

#### 6.5.5 Stability Analysis

The ellectic trains of engineers could be  $\log p \sim 2$  with a "z + byteg z = z , then the train while z and to colombia, sell erwice unstable. La kiel se inconoda will divelige away from so un allera i paper even owish la

ki qagarara shiyie deginidhaa oqisii d

$$Z = -\frac{\pi}{2} \left[ F \right]$$
 ... (i)

Conches in regulate mostly is

Long a Lichten in Leit-

$$y^* = y^*$$

15. Us had the real of, on for class that in Talene mothers.

Differs bette flected on a  $(\chi_{ab}) = \chi_{ab} \cos(\omega_b \chi_b)$ 

$$= \langle y_i \rangle + 5 \lambda_{ij} .$$

$$= (1+i\epsilon) (j)$$

thus, compare  $((\omega_0)_{i\in I})$  we get

$$C = 1 - 5\lambda$$

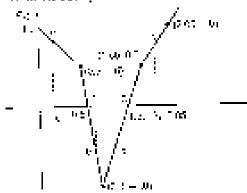
Payoff on to shift this if  $\|\mathcal{L}_{L^{\infty}}\|_{L^{\infty}}$ 

So can bin for substry at

$$-c_1 < \alpha \in \{0,1\}$$

## Provious CAVII and ESF Questions

Colling Glegewich industry with this with coefficient published they in the factor relak (complete) n 484 (0.508<del>=</del>).



с уж цер 1 о Момјун Сити дол толичи в 1900. if a roote of f(z) = 0 using  $z R_{\rm e} v = 4 R_{\rm e} v R_{\rm e}$ regnerated year productions are researched would be

- 141 s. (15 care of Figure 64-cly)
- game, program to a respectively.
- $\phi(\cdot,2,1)$  and 0.8 respectively.
- $(y^{(i)},y_i)$  is and its teacher  $(y^{(i)},y_i)$

[CS], GA[[[-2003, 2 marks]].

 $\underline{\omega} \geq -\Pi$  a concessly of Winner constraints an arrate in  $\times$ ship diagrams

$$\mathfrak{S}_{\mathcal{A}}^{(1)} \subset (\mathbb{R}^{3})$$

Statement for Lighert Analysis Queen one & sould 4. (spanished) was wear a generalized in the  $\phi$  is constitutive

 $\gamma_{\rm F} \, \gamma_{\rm FWO} \, (-7 s_1)$  from that contacts  $(-6.7) \approx 0.$ 

G.S. Tipy Naw on Roomson a gordfint of . ⇔ + notice ::: :2

$$(\mathbf{n}(\mathbf{x}_{r,s}) = \frac{1}{2\pi} \partial t^{-s} \frac{dt^{s}}{\mathbf{x}_{r,s}}$$

$$\begin{split} & \left[ \psi(x_{k+1} + \ldots + \frac{1}{2} \phi_k) \right] \\ & \left[ \psi(x_{k+1} + 2 \lambda_k + \lambda_k)^2 \right] \end{split}$$

$$\|(x)\|_{L^\infty(\mathbb{R}^n)}^2 = \lambda \cdot e^{-\lambda}$$

$$\sin \phi_{\rm a,j} = \sqrt{\frac{3}{2}} \xi^2$$

j⊜£ GATE-2500 2 ma⊀8∤.

 $\label{eq:continuous} (\underline{h}, r) = \mathbb{D} \times (q + f) \exp( x \times r) f(f) + e(f + f) = \mathbb{D} (f, f) \in \mathbb{R}^{n} \times \mathbb{R}^{n}$ iarchone 💖 🙉

<sub>95</sub>) (2,14 (0.130)).

Tigo du 1930

Q-652 0 1419 .

(a) 5 (0.0 1498)

ICH GAIE 2005, 2 marke].

3/3

0.6 - Jacky Lamb – Yrak archolfsekim Ropinak we have the pulsar of the  $\mathcal{S} = \mathcal{S} = \mathcal{S} = \mathcal{S} = \mathcal{S}$ closs the resolvation (Section

 $(6)/a_0 = J/5.$ 

(p) = -1.400

 $W(\lambda, x) \in \mathbb{Z}$ 154 / 1.5E

TIME GATE-2005, 2 TIA: KS]

Op. Maion Eistel et il i still a in salectice summi answer to my the power given power field file.

AL NEWTON BOX 9 1 POLITICAL

 $R_{\rm c} = R_{\rm L} \log (R_{\rm B} \log n)$  and add court of 2.27

 $\mathbf{E} = \mathbf{S}_{1} + \mathbf{p}_{2} \mathbf{v}_{1} + \mathbf{F}_{1} \mathbf{D} \mathbf{S}_{2} \mathbf{v}_{3} + \mathbf{D}^{2}$ 

நடந்துகள்ளான்ன

\_ et-II

 $\Phi = \phi_{A, A} \phi_{A, A} \phi_{A}$  , which are abundanced

Sobil dikin Hanbous Insancovaši i si

து ஆக்க வளமை விசு**ு**ர்க

 $\xi_{\rm s}$  of a coloral rileges (6).

g In arreduce v

e. Gabalai mai Ngareyo (A

Genor:

!::;

(g) E

I\_C, GATE 2005, 2 morks\*

 $Q_{\rm s}^{\rm T} = 20$  , as given polymorphism of the transfer that the 20and  $16 \times 12 = 0$ , 1 size 2, respectively, 100, 0.40 H.

 $\overline{[}_{CCGGGN}$  is he definition by Aig What the

appeared the in this rate. What a me disc idoline : as flace value i applicant de value 1 i Ale wai introlli

$$\phi = \frac{4}{9}$$

$$\sqrt{2}1 = \frac{2}{3}$$

(c) 
$$\frac{2}{3}$$

[CL: SATE-2003, 2 malks].

- $0.9 \pm 15\%$  Hills should cause the (5)-5% ( )  $\pm 1.25\%$  in (5) or solving starts the envelopment of Turns. te-Mod with the Ligar dary  $\alpha$  . Then  $\phi = - \kappa_{\rm LM} + \omega_{\rm LM}$ Zi ili wizi a interi kwe  $v^*$ i ili Milat wobio deli  $oldsymbol{+}$  $20.06 \pm y_{12.00} = -7$ 
  - (a) 35
- 用连车点。
- for Biotic
- 801.35%

[OB\_GATE-2000\_1 mails].

© 9 - Obtain at ordination in exemption

$$Y^2 \leftarrow (D_x^2 + R^4 y + \gamma_D + \gamma_C + \gamma_C)$$

Leoharra Jagaire

- 16. 多数更多
- ©15 a da
- ic; Sary 1
- (d) Zara-A

!C=. C-011, 2007, 2 marks,

 $0.40~T \oplus {
m close}$  by equation have lettered in the elliptity 

$$\mathbf{Y}^{2} = 4\mathbf{x} + 3\mathbf{y} + \mathbf{y}$$

Not the section of the recipose to Of Chicago In Network (eve.)

$$(40.05) = -\frac{2 x_0^2 + 3}{3 x_0^2 + 3}$$

$$\lambda_{(0,1)}(x)\to =\frac{\lambda_0^{-2}+4}{2\pi \lambda_0^2+2}.$$

$$\hat{\theta}(t, x_{n-1}, \dots, x_{n}) \in \operatorname{con}_{n-1}^{2}([n, t])$$

$$(y^*, x_{1,1}) = \frac{4x_1^2}{8x_1^2} - \frac{3}{2}$$

CF, CATE 2337, 2 q arks

- $\mathbf{G}_{n}^{(1)}$  . The equation  $\partial^{2} + \mathbf{v}^{(1)} \cdot \mathbf{d} \mathbf{z}^{(2)} \times \mathbb{R}$  , it is to bring they  $0.2 n_{\rm B}$  , a Newton-Pachson mail (  $\rho_{\rm b} p_{\rm B} = n_{\rm B}$ la contra de matamata not or mithe equal or, . Her one tiek i goptaal twister genag iff teer elegati art ge
  - 16. S
- :or 1

[=U. GATE-2007, 2 njejkg].

Quital Considering on the  $\tau_{\gamma+1}=\frac{\tau_{\gamma}}{2}+\frac{H}{2\pi\epsilon},\;\tau_{\gamma}=0$  .

Able red from the Nemon (Apphorning, locality, CCF A CONTRACTOR

- [5: 1.5]
- (5) LE

[CS\_BATE-2007, 2 mark-]

 $G_{\rm c}(B,A) \approx 0.1910$  , the Alacticated to the Almigratistics

Ceutida for el Thy which of  $\int_{\mathbb{R}^2 \times \mathbb{R}^2} g_{1,n} \, ds = 0$  .

evaluation using this of a ratio to make de-Photocombined group intervals in programment Skills ju

- (5) (0.00) (2)
- # 1 COCC
- (5) (3,005,00)
- (4) 10 0.25

Mb. 3ATF-200r, 2 mark-1

- G. 4 The differential equation (except ) f(t) = r(t)/2රම misec using Fire's numerical integration economic Lie Implist,)  $\Delta T \sim 0.06$  and  $\infty 100$ maximum der regibte of its of the matthe and left the society of the angeworking eKA etetindeg with 9.
  - (E) I
- 115 15
- у... Г

(EE, GA1647007, 2 marks)

- $\mathbf{Q}_{i}$  (5.15 Eq.  $\mu$  i)  $\mu_{i}$   $\mu$  = 0.3 equivalent on  $\mu_{i}$  using Nowledge freehold with an initial guests  $\omega=-1$ Then, after a expectition that have a school of  $x \in \mathbb{R}^{n}$ n of the colonia and legistration.
  - (4) 17(4,29)
- (i) Luc/#4
- 15 ( O 20<u>86</u> )
- ABC GOOD

(E5, GATF-2008, 2 marks)

- G.48 The results of matter to solve v=v ) using Newton Aphson heropia.
  - $(e)_{(A_{p+1})_{p+1}} = a_{p+1} \otimes$
  - $(b)(x_{i+1}) \leq (c_i + c_i)^{-1} +$

$$(91.8 \pm 1.07 \pm 1.8) \frac{6.37}{1 + 6.01}$$

$$\mathcal{F}(\{x_{j_1},\dots,y_{j_n}\}) = \frac{1}{2} \frac{\mathcal{F}(x_{j_1},\dots,x_{j_n})}{x_{j_n} + 2^{j_n}} \frac{1}{2} - 1$$

'FO, CANL 2009, 2 marks,

- Q 17 The Nepton Rephson level of  $m_{\rm ph} = \frac{1}{2} \left[ z_0 + \frac{77}{11} \right]$ 
  - ser polices systemate Le
  - இந்துக்கு செல ul Almain erabal M
  - $\{g\}$  is precise at MS , with logarithm of  $\alpha$ [[DS\_GM[E-2000, 2 n acket]

Q 18 File and minimum to robotical allength subullenses.

ووواده العالمة أحداث المامي المعالم المامي المام

 $\phi^*\phi^*(a+a)$  (  $B=0.7^2$  ) singline hapozoidu, iuliuis

- (9) 700 (4)
- 1001 0000
- m. 50c
- (d) A

105 GATE-2008 2 marks).

Outplucted in the Eq. The tells were point in to their ysi y jihlekite ie Pytorisania malnodija given by

$$\langle \sigma (|\omega_{ij}\rangle) = 4 \cdot \frac{1}{2} \frac{1}{2} \langle w_{ij} - \frac{1}{2} \frac{\pi}{2} \rangle$$

$$(0) \cdot \mathbf{v}_{k+1} = \mathbf{c}_k \sim \frac{117}{100}$$

$$(|\psi(x_1)-x|x_2)\cdot\frac{A}{112}$$

$$\mathcal{R}(|x_0|) \approx x_0 - \frac{\alpha^2}{\alpha_0} x_0 - \frac{117}{\alpha_0} \Big]$$

[aB, 3A 1, 2009, 2 marks]

- 💢 20 Nactor Magazon his free is obet (b. b.), ki i K. (200000179992229912393124404069319355435500pgg sygge Thalaiche simadon trib, choireradar
  - (a): 3,675.
- (5: J.5)
- $(y) \mapsto \partial G$
- no: Bucul
- [CS GATE-20 D. Limatk].

 $\odot$  2). The topical partial place was constructed and  $\phi$ and much terretures on a duminory ald of 0.75.

The value of the integral of the fund on He w→ C the mire are flusing Scipe to an IniX

- W. L.A.S.
- 用在2.55500
- off) 2.00000
- TOLL GATE-2010, 2 ne kal
- **Q.22** To but a concept  $a_1$  and  $a_2$  are easy  $a_1$   $a_2$   $a_3$ n Inglocije Flywdda a ergy (i'r 100 - Alicedd) ស្រុខឬ (ម៉ែលខេត្ត នៃយ៉ាង ជា

 $\hat{q} \in \mathbb{R}^{d}$ 

odu et i

IME GATE-2010 2 minks).

Q.23 Objective differential equation  $\frac{2(p, \mathbf{v})}{2} = \mathcal{C}(p)$  in

with terminal parameter  $\chi(0)=0.08$  (  $\chi(0)^{-1}$ Parkerter method with a step size of 6.5 % 1% value of 970.00 kg

- 120 O T L
- (2.003)
- (%) 110,351
- 163.33

JLC, 64TE-2010, 2 marks)

**Q** 24. Ly  $\mu(x) > 4\mu + \frac{2}{\mu^4 + 1}$  is accompanient with

emailer of a lower that color hands of \$10000 and upper diangular met ix [2]. Led property  $g \in \mathfrak{g}_{\mathrm{supp}}(\mathfrak{g}) \mathfrak{g} \to \mathbb{R}_{+}[A(\mathfrak{g}),A(\mathfrak{g})]$  in the term of the supplies  $\mathfrak{g}_{\mathrm{supp}}(\mathfrak{g})$ 

$$|g\rangle \left[\frac{1+\epsilon}{\epsilon-1}\Big|\arg\Big|\frac{1+\frac{\epsilon}{2}}{\delta-2}\Big|$$

- $2r^2 \frac{(\lambda 1)}{2} \text{ and } \frac{1}{1 1}$
- $|w\rangle = \frac{C}{c(1-1)} e^{-\frac{1}{2}} \frac{1}{c} = \frac{1}{1}.$
- $[2t] \begin{bmatrix} x & Y \\ 2 & y \end{bmatrix} \in \operatorname{M} \left[ \frac{2\pi i y}{y} \right]$

<sub>(</sub>БЕ GAIL 2011-2 пресяя)

Q 25 Токрала апрессталынын Мэн жене bedook holopplanging Newton Bernsen (16 million \$15 ft)  $\operatorname{ogus}_{\Gamma}\operatorname{cons}_{\Gamma}$  . Which the remains its factor in the .  $y \in \mathbb{R}^{n \times n}$  is the following which

$$(2h \cdot q) := \frac{1}{2a} \left[ e^{-\frac{2a}{2a}} \right].$$

$$\dim \left[ \gamma_{+} = \frac{r_{+}^{2}}{\gamma_{+}^{2}} \lambda_{1}^{2} + \frac{r_{+}^{2}}{\lambda_{-}^{2}} \right]$$

$$\langle \tau_1, x_0 \rangle = \frac{1}{2} \left[ \tau - \frac{\partial^{(1)}}{\tau_0} \right]$$

$$100 < \frac{1}{4} \cdot \frac{1}{2} \cdot \frac{6}{3} \cdot \frac{6}{3}$$

US. (4A) [-2011, 2 o AF&)

ୟ **26** କିଲୋଲେମ 'e kigerrai yoqubboh

$$x^2 - x^2 + x - 3 = 0$$
 and

$$\{(-1,+1,+1,+1)\}$$

Q 2) രീഡോട് നെ±്രാന് മാന് ഭേഷം പുരുത്തു. പ്രതിരക്കു equations to be perfect that entitly employing the Newton Habasca i erating negling. equation (i)  $10a + i m + 0.9 \pm 9$ 

on the 
$$H(\mathcal{M}_{ab}^{-1})$$
 that constants  $0.8 \pm 0.8$ 

Assuming the inflation case  $-100\,\mathrm{grg}_{\odot}$  . Fig. I е сороб апітаМ-і яі

$$\left| k_i \begin{bmatrix} 10 & -jk \\ 0 & 00 \end{bmatrix} \right| = \left| \begin{pmatrix} 0 & 0 \\ 0 & j \end{pmatrix} \right|_{T}^{T}$$

$$0.0 \begin{bmatrix} 0.000 & 0.000 & 0.000 \\ 0.0000 & 0.000 & 0.000 \end{bmatrix}$$

$$0.5 \frac{10}{10} = 0$$

[EU, GMIE 20 1, 2 marks]

- CLSB A converse equation of the person of  $q_{\mathcal{F}}$  .
  - $x + \delta x + \delta = 0$  , with  $\phi = 0$  we need using New  $\alpha =$ Bachdan mathes I Bither  $g_{ab}$  ,  $g_{ab}$  again  $g_{ab} = g_{ab}$  , the position if sickline of viriality be asset to
  - Dia nestrator i-
  - tat 0.508.
- (b) 2.730
- $(x,y)\in F(X)$
- 1013 305
- [EB, GATE-9011, 2 market]
- $\mathbb{Q}^{pq}$  The Heghol  $\int_{\mathbb{R}^{n}} e^{i\mathbf{x}} d\mathbf{x}$  when everywhere  $\mathbf{u}_{i}$  using

š ir psonči 120 minos tek se gladija birotycih oddini والعربي وتوددا د

- 124 | 1,000
- iLy 1 0281
- (5) I (1)
- 100 1 690

[Ma, GATF-2011 2 marks].

- ≦ 20 The level commoned is operation of surplusing can of the function of  $A = A = a = p^{-1}$  ,  $A = p + p^{-1}$ [0.002a, [0.9]] in order to the inverges (0.00155a)கிய \_\_\_\_remotiv
  - $(y_{i})$
- $\{I_{i,j}\}$
- 10° U
- 187 .7

[CS, SAI± 2012, 2 mark4].

- (0.21) The extimate of  $\int_0^{0.05} (3 m) dr s = s \log 3 \log s \cos 3$ Public that he equal is a fact on each usuant to become the extellation by:
  - fot 0.500.
- abi 0.00%
- 0.73124
- (d) 0.0 0

[CE: GATL 2012 | I mark]

Q.52 The entropy  $\frac{\partial}{\partial x} \eta(y) = \cot z$  or later of z in Eq.

colombate in St. (1990) will give serious directions.

$$\text{refinite} \frac{d}{dx} f(x) = \frac{dx_1 + d(-ix_1 + i)}{2x_1} \leq 2$$

- $\kappa \cdot \Phi^{(k)}$  the values of  $\kappa$  and Cyglians 18.75, and at 2.01 respectively. The por exponent granging THE RELIABILITY OF PROPERTY AND ADMINISTRATION OF A PARTY. opproxima da
- (조) 32 X (2<sup>4)</sup>
- $0.033 \times 10^{-6}$
- (c) 4.5 × 10 °.
- $-(a) \cap C \times 10^{-}$

[GL, 37/ ± 2012, 2 marks].

- \$2.82 Wind Talke-creTaphsy methodicappics to order that or, ration that  $\| \mathbf{x}^{ij} - \mathbf{x}^{ij} - \mathbf{x}^{ij} \| \leq \zeta_{ij}$  the solution extractional all that if  $x = e(x)^{2} e^{-x/2} e^{-x/2}$ in the garden value above  $\kappa = 1.2$  s.
  - [/2 **-** 189]
- (5) O. 705
- · 图图 1 图象
- FF, GATF-2013, 2 Marks]
- Q34 Tierreu raccolitte and romann war e deji as extra helecting or otherwise in test as tit vasaa 185 asia. Taka ille aleg jilangiin sa 1

$$\frac{d}{dt} = \lim_{t \to 0} dt$$

DE, SATE-2013, 2 Vark).

0.35 Marchiller one Large

Nomerical Integration — Order of Hitra-Scheme: Palynom (J.

- Bittpstank 3/8 Dure.
- 1 Г г
- C Torr≠vaign C(let
- 2 Gerond Allen
- Pi Cimperne 19 Kura i (a) 5-2, Q.5, B.5 -
  - 198499, G 2 R 1
- 21 1,0 5,4 5
- 11) P.S. Q.A. B.W.

[ML, GAIL SC S, MARK!

 $\mathbb{Q}/36$  While full remarks that  $\mathbb{P}_{i}$  the conference +1 of i and

 $\frac{2g}{dr} \left( g_{x} g^{2} + g_{x} g^{2} \right) = 0$  , when Letter's preprinces

്റ്റ് ഗുന്നുനുന്നുള്ളുള്ള Fule siliculation a this status is is is  $p_{1} \otimes g_{1}$  (regular) is all g after the line,  $g,g \in \mathcal{B}$ 

细工具件

(E) 13.5

 $\hat{\mathbf{u}} \in \Omega^{\infty}$ 

66.05%

[IN, GATE-2013 : 2 marks]

QUBB Motel: the legence conto appropriate in a Citab and co

Application

P1. Numerical integrision

프로: 공급 ([[6]] [[5] 등 ( 4 1) ( 2 1**deni**z) ( 2 2 2 3 3 3 4

ру (57), не въвсетен о Преднавайста

PM: Subscience de l'eller y Allen

Маг Мэслов Вады жыл Майса.

92: Russe with Mattee

M3)  $S_{H,2} \approx a^{\frac{1}{2}a} / (3 \cdot H_0)$ 

M4: Can of Phrihation Methods

65 P1 M3, P2 M5 73--M4, P4 M1

(5) PT - MO, PT -- M1 F2 - M4, 71 - M2

(5) - 1 - 104 - 704 M - 114 Mb 1 144 Mb 1

gri 25 \_\_\_\_\_\_ 201 유기 보고 [15] - 64 3, PM = 844

[EG, RATE 2014 : 1 Me/4].

ൂ 38 The real rough Hereiumen w. 2 കയ −1 - 0 (ap (playor, et all clicacuraby) ki

ME\_GATE-2014 12 Marks]

 $\mathbf{Q}_{i}(\mathbf{p};\mathbf{T})$  with the state  $f(\mathbf{r})=\mathbf{p}^{*}+\mathbf{1}$  with the solved  $(\mathbf{p}^{*})_{\mathbf{Q}}$ gegege Raphsonical virilation (allowed by, s taxon las 1.0. I coltro accolerent i l'accordi g, gentlenktett is \_\_\_\_\_ ...

[DE\_GATE-2014 : 2 Marks].

g 40 in me Ne¥lon (kg/ x ili mettes lanında/ig ∺ek  $m_{\rm B} = 2 \, \mathrm{g} \, \mathrm{mat} + 4 \, \mathrm{MHz} \, \mathrm{absolution} \, \lambda_1 \, \lambda_1 \, \lambda_2 \sim 5 \, \mathrm{s}$ polyment for this business in

በፖርያን ይህ ይህ ተለ ተ 🕹

Constantine switcher in

(i) a<sub>i</sub> ∈ U.

р гр. Трэр и асумб од учерове ил я вирийот *е*т аг Galic Aumobrio Della Tras-

Milion of the lo/own g e <sup>TRI</sup>.Fi

of unit i

ura Cris

(Salgoth Lead II.)

TOTAL CONTRACT OF

]CS, GATÉ-2014 (3et-2) - **2 M**ork**s**].

(3.44) . Fig. values of  $\int d\sigma'(ddz) \, dz dz$  is the using the neglez á sa in le with the salán a salá sa ,  $\varepsilon$  .

[ME, CATE-2014 : 2 Marks]

Ozzi≣e seleto mogra Š⊕na sicopicale Liki š

 $_{\mathrm{BS}}$  propried the solution of the specific of the specific propried the specific of the SERVICE III

UML GATE-2014:1 Mark)

CI,42 Using the hapezoidal in let one dividing the i ne valatinografica i kalitika zbuzi se et $e^{i k t} \lambda_{i}$ 

[Mc, @ATF-9014 : 8 Marks].

2,44 (Windex Sampointo huned of CVS 82.00 D). H

 $\operatorname{coll}(\operatorname{id})$  e(m.  $\operatorname{e}' = \int_{-\infty}^{\infty} x^2 \operatorname{d} x$  where  $\operatorname{coll}(\operatorname{id})$ 

g/con, gripped the relevanty state forms state.  $BJL^{-}$ 

gg ITT envisions Moora half to Sing the bodes of sit um it aways greats that or econ to the a etgi va qeliri ina damilto i degiali

 $\eta \in [r_0, r_0]$  where K action on the i j  $\pm i$  S mass r Sne a charve ogget in and extert value of the Secure of the property.

ist Lanc.

[a: or ly:

 $\langle p_1 | p_2 \rangle$  ,  $\langle p_1 | p_2 \rangle$ 

inger ejgather Locatio

10S, GATF-2014 : 2 Mark#].

0.45 Car Picter on ordinary of the put of expension

 $\frac{d\theta}{dt} = \max\{1, 1\} = v_0 \sin t + 0 \text{ the } i \in (-0.5)^{1/3} \lambda_i$ 

 $g_{H}$  and  $g_{h}$  and  $g_{h}$  and  $g_{h}$  and  $g_{h}$  and  $g_{h}$  $_{2000}$  molecules,  $f \approx 2$  -10 fib.s.  $G_{\rm s} \Delta_{\rm s} = f/2$  (ii)

60 0.25

361 3 44

D+ 0.35

igi 🠧 😘

IME (JATE-2014 | 2 Marks)

Quasi-modulation positional results  $\left|\frac{x-y}{x-y}\right|$  . If

the Tagonal divise is in 5 are politic, then had Investigation along \$1,00 \$18. 108, 0475-7015 : 1 Mark! Q.4 r = a serial residuación autobes no have a mon taliffo in ence (un en tropa elripa pape el tretalidad que signa entre SITRIJES.

 $10((\hat{A} + 1 + \hat{A} + \hat{A})) = (\hat{A} + \hat{A} + \hat{A}) + (\hat{A} + \hat{A} + \hat{A}) + (\hat{A} + \hat{A} + \hat{A}) + (\hat{A} + \hat{A} + \hat{A}) = (\hat{A} + \hat{A} + \hat{A}) + (\hat{A}  + (\hat{A}$ 

(4) (49) Months I to the Relegion 5.

[FF GATL SD 5::: Merk]

Codd the quality equation of a property solution in the property solution is the property of t

EE, SATE-2013 : 2 Marks)

GL79 in NASON -People of common neither. The mile guessivanta (A) is subspicted as less which is injury common the equation:

ne ( ) with -80 - 40% and 50% The correction law, which contains the  $\gamma_{\rm eff}$  the H of the  $\mu$  to  $\mu_{\rm eff}$  . Mark [C.E., GATE-2015 ; 1 Mark ]

4.90 New or Hoorson is the guestation of through of the excellent of a 22 to 35 to 10 
[MR. GATE 2015 . 2 Med 8s]

O & 1 for Newton Bacartonic ethiop is uncommon wive the could unlife) = x<sup>2</sup> - 5x<sup>2</sup> - 5x - 5 = 0 foking The new Type - x x = 0, the solution year month The end of the Hill is a year o\_\_\_\_\_\_.

[FC GATE 2015 P Marks]

Quality to some method is that in the monotonian evaluation for the first section from the evaluation for a product and entirecess, one by the vicinosist of the entireces of the entire the first social form the product will give the continuous of the first social form the product will give the continuous of the entire product will be producted as the entire that the entire product of the entire that the entire

Secani

In the late,  $\tau_{ij}, \tau_{jk} \in \mathcal{N}$  $\mathcal{O}_i = \text{convergence}(i)$ 

 $\dot{\Phi} = \Phi \Phi \dot{\Phi}$  $h^{0.5}$  = in decimal training at  $h^{0.5}$   $_{
m cons}$   $_{
m cons}$ : - f Walte Lie Beng | \_ | ngaga x = 0 . White each point for  $t_{\rm e} = 5700000$  ) and section in ∛ rioπeseta e ини е  $r_{\mu} = r_{\mu} V_{\mu} V_{\mu} e v v_{\mu} v_{\mu}$  $x_{ij} = r_{ij}^{(i)} \text{ text} \ \mathbf{Y}_{ij}$ copydie  $\Gamma: \Gamma \to \mathbb{R}$  ben Albob storming a star  $p_0 = p_0$ who has converge by:  $\vdash \forall \, \neg$ ማሳ ተ እንዚ እር 212.1 time.  $(f_{\alpha} - (f_{\alpha})) \in \mathcal{F}(f_{\alpha} - f_{\alpha})$  $(X(Y_1 - Y_2 - Y_3))(Y_2 \wedge (Y_2 - \chi_3))$  $(|\partial r_1 - \partial r_2 - \lambda_1)|r| + (r_1 - \delta)(r_1)$  $(\lambda(x_i + (x_k - x_i), t_i, t_i)) = f(x_i)$ [CS, GA12-7015 | 2 Marks]

C 53. The minimal  $\int_{0}^{\infty} dx \, |x_{1,2}(x_{1,2}) | dx \, |x_{2,2}(x_{2,2}) dx$ 

wholefoly is well as punioned dusting a original application of the expectation. If a margant value of the investigation of the investigation of the investigation of the investigation of the expectation of the expectation of the investigation of the expectation in the investigation of the investigation

900 or 802

 $\mathcal{T}' \to \mathcal{T}$ 

99 J - 5

(v) hour control single-permitted transfering grap (GF, GATS 2015 : 1 Mg/k)

0.54 FV details,  $\Delta_{\rm s}=0.4$ , the value of lattering thoughts 0.8 at a  $_{\rm s}$ 

$$\int_{0}^{\infty} |\hat{f}|^{2} dt = 2.5 \cdot (2.06)^{2} + 675 \cdot \hat{f} + 800 \cdot (1400 \cdot \hat{f})^{2}.$$

(CC, GALE 2015 - 2 Marks

 $0.681 \times q \le contract \times and a solution of the que$ 

ME (3ATE-2015) || Vorkj

 $\mathcal{O}$  for Matrix is  $\frac{3}{2}$  and plants is solved the protocol

$$r_{\rm e} h = \frac{2}{3} e^2 + \frac{3}{6} \left( \pm w r_{\rm e} h + 1 + 1 + 1 + 2 \right) g$$

the least in matrice equal such filterases  $\overline{X}$  in white 20 Jan 1 10 J 70 St

рув, 37/73/2016 - 1 Мага)

Q<sub>D</sub>γ ⊐ riba designitus Mestrugia. Sidistropi o dita  $a \in g(x_0) \cap I \mapsto C(x_0)$ 

$$\frac{1}{900} \frac{|1170|}{900} \frac{|02|}{900} \frac{30}{10} \frac{|02|}{900} \frac{30}{900} \frac{|02|}{900}$$

rtiking trapezision fulbistasi siko et 0.1 bin

$$\operatorname{spec}_{A}(\sigma) = \int\limits_{-\pi}^{2\pi} f(\tilde{A}) d\sigma(\tilde{a}) = \underline{\qquad},$$

1ME\_GATE-2015 : 8 Marks)

 $0.53 \, \, \mathrm{TeVelous}$  with the lower matrix of a relation 5which algebraiche rest. Paigisch abhast i reichtle  $q_{1,1}$  is a final manufactor  $x \approx 2.1 \pm 6.5$ 

repeating to properties the first below to record the c magogla spiol deurosts anyther in if influence ist glampay is 1985 rule is

[G3, GAIL 2015 : 2 Marks]

Çigê Gelas Su Jel mattodire teac to so -= 10  $_{\rm O}$  and  $_{\rm O}$  and the property of particles given constructed as

$$\frac{1}{2}x_1 + \frac{3}{2}x_2 + \frac{3}{2}x_3 = \frac{1}{2}$$

$$\frac{3}{2}x_1 + \frac{3}{2}x_2 + \frac{3}{2}x_3 = \frac{1}{2}$$

 $\omega_{ij} = i \cdot \lambda \gamma_{ij} + i \gamma_{ij} = 1$ as a ming  $\tilde{p}_i(\omega^{\dagger})$  and let  $v_i = v_i = v_i + 1$  the gg per discollar the instruction is:

TMF 2010: 2 Marks

Olaz Cyse Telaniciano i 16 cauciusi y fili Nesta E Raphin memod The fire gless o

 $z=\frac{\pi}{4}$  . The solve of the produced less with the

Stoute His fund to section! float mail 8 [MF. 2016], 1 Marvil

 $\mathbf{Q}_{n}(\mathbf{p})$  . The result of holicity, so that  $\mathbf{p}^{(k)}(\mathbf{p})=0$  has now effect first iteration, on as pricellant via Newton -aphannachemen side an milat giving  $a_{ij}$  ,  $a_{ij}$ 7

(c) 0.897 144,008,43

n>1.000100 00 (50)

[W2, 2016 | T Yark]

Oug Stewart Rephysical Includes that used to be to a following 3x + 3x + 4x + 6 + 6 begin itself valva cent for one present to 0.93 the field ар арымына көрбенунын жанаше он т

[CE, 2016 : NAMA]

ഇതു ചെന്നു വേഷം വേഷം വേഷം 2014 വർഗ് വേഷം 2015 വ ne accident i dat ongleser adiorumskim kanda

(<sub>4</sub>) 1 4-0

(a) paulis in

海面 化合作证券

po) ny je čiála [MF, 2016 | 1 Mark].

Q 84 undicarry in a measury computing the integer

 $\int_{\Omega} (g_1)_{a=1} \cos g g(x)$  . Another recent Gardeni's

dime research opedia of leasest fraction

ME 2015 : 8 Marke!

กรอบการเหมียวการทำราชการเรียนสมัยว

$$\frac{dx}{dt} = -\zeta_{th} = 2 \cdot \cos \theta t \, \chi(\beta)$$

 $g_{\rm cos}(t)$  and well two g the spread of Hubbline Index. The larger, and stop the non-bencer, to solve Jean programments as, Le carried suction unciar – A 📖

[00] 2018 : 2 Merks

 $\odot$  66  $\odot$  rising the first point is stable problem.  $\label{eq:continuous_problem} |\mathcal{S} = \gamma_{i,j}| |2\gamma - \gamma^2 - \gamma_{i,j}(j) = |\gamma| \cdot 100 \leq \epsilon \leq 10$ 

where of solution  $y(x) = x^{y} + 2x^{y} \cos x = 0.1$ , the concerns je litera da savernije sa dischiba yn bit a soluk en strainde heinig a sarglene rollor. of the swince order Purgo, with method with  $\sup_{t \in \mathcal{C}_{k}} g(z_{k+1}) = 0 + |z|.$ 

a⊵o, arna ili Markji

\$ 67 Proj. Cl. O(0.0 4) and Fill (2) and interciposits of go come desired by Not Notice on Plagacian ic harded out using both I approach fore and Simply the rate  $g_{ij}^{\mu}$  on Timber 2 is done  $\mu=0$  for ры у, кай I по з Леге пос родуне Плосаю і на в % ार्ग उस

$$\begin{array}{ll} \langle \hat{\phi} \rangle U & = \langle \hat{\phi} \rangle \langle \Delta U \\ \hat{\phi} \rangle U & = \langle \hat{\phi} \rangle \langle \Delta U \rangle \end{array}$$

[Ma, GAT5-2017 : 9 Marks]

CLSS The Millergraft an island of legacipolish and four polished and the distribution of the graft and the following of the political states of a The order of the politicals.

	F,1]	- 	31	1 227
<u> </u>	∵ <u>4≡</u>		. 1000	:
	12555 	<u>=: 20.00</u>	ा <u>र</u> ू	02201
- -		0.04:5	pochay.	<u>01186</u>
	, ,	-"!"	. <u> </u>	-n * ' <u>∿.</u>
<u>'</u>	<del>_</del>	-0.004 /	7 0699 T	
2.5			- *. *	<u> </u>
L	V =-=:	-11°11 -	<u>-n</u> .v.	0.1152
:01.1		:i	2.	
31.0		•,	5) r	

[IN, GATE-2017 : 2 Marks]

GLES On a character that real conditions of the character 
[EE GATT-2017, 2 Marks

Q.75 Secting with  $\epsilon=1$  the calling of the constant  $e^2=x=0$ , the law terminals of Hawlen-Raphson will choose  $e^2$  for we do many green in

[LC 3ATF-2017 2 VL/ks]

Q.7% Consider , copplying  $\frac{1}{12} = 2e^{i\phi} + 3e^{i\phi} + 3e^{i\phi}$ 

Africa Line x conditions a beginning and beware commence with a kep size. And 2, 20 His section in the control as that the line step is

[GF\_GATG-20]7 P Marks]

Answers Numerical Methods

1.	:-:	2.	1.7.	3	(5)	4.	ıtı	Ę	::::	Ę	:::1	7	;	Я.	٠	<u> </u>	
Ψ.		٦٦.	:A.	. 5	23		:40	- 4	,A,	- L	,40	16.	u;	12.	ig"	- 6	
.!=	14[	20	. 1	יה.	Le	55	• • • • •	23.	. #	24.	l;	25.	15.	26.	le"i	27.	ć si
<b>₽</b> ₩.	134	23	142]	3).	iby	31.	्या	35,	(d)	33.	90)	85	l::	88.		37.	đá
40.		4%	::::	15.	:::	17.	n( )	t2.	16 :	. 5J.	IC;	61	( <b>7</b> 1	63	·51	87,	19:
ĽE.	ψĢ																

## Explenations Numerical Alethods

#### 1 (E)

Starting his Landbook in A

$$=\frac{-10!}{7-10!}=-1$$

 $-a_0 r_{10} = a_0 r_{10} = 1$ 

For  $|\mathbf{c}(\mathbf{c})| \ge |\mathbf{c}(\mathbf{c})| + |\mathbf{c}(\mathbf{c})| + |\mathbf{c}(\mathbf{c})| + |\mathbf{c}(\mathbf{c})|$ 

 $(\mu_{i,j+1},\mu_{j,j})$  with sum observed (i, +, -j, +, 0) , where 1graphs in a sufficient in State person of cultination without the machine  $200^{\circ}$  . Fig.

A 10000 0913

Section of the section of the

me per randicular at a fix current me for a mail with 0.85

Secreptions.

$$\xi_{\rm eff} \approx 0.052 \ e^2 - \frac{1 - 0.05}{9.00 \ e^{-1.5 \overline{\Sigma}}} = 1$$

 $L_{\rm Q} \approx 100$  of the  $z\sim 0.5$  m by -1.000

$$r_{\rm ext}$$
 ,  $r_{\rm ext}$   $r_{\rm ext}$   $r_{\rm ext}$ 

 $1.3 \times 10^{10} \pm 0.0010 \text{ arisinos} = 1.000$ 

Since x = 1.65 a sets  $y_{10} = 0.8$  the according of  $ho_{1,2}=\{(0,1,2),(0,1)\}$  and (0,2) for (0,1) $\phi_{\mathcal{O}_{\mathcal{O}}}$  will a hydrodous such  $\mathcal{O}_{\mathcal{O}}(X)$ 

 $x_{i,j}$  electrical from  $[x_{i,j}, y_{i,j}] = x_{i,j} + x_{i,j}$  $p_{\rm eff}$  with the  $P_{\rm eff}$ 

#### Э.

 $a | cet_{\mathcal{A}} f_{\sigma} = \frac{1}{s} (sarg ) (fine a)$  and

 $\delta \Delta$  of the constant  $\Delta \tau$ 

$$\Rightarrow \frac{1}{2} \quad a = 3$$

$$q = -\frac{1}{2}(\mathbf{x}) = \frac{1}{2} - \mathbf{d} = 0$$

$$P_{i,j,k,l} = P_{i,k,l} = -\frac{\lambda}{l^2}$$

$$f(\mathbf{v}_{\mathbf{u}}) = \frac{1}{\lambda} - 2\lambda$$

$$|\mathcal{L}(x_0)| = -\frac{1}{c'}.$$

$$\boldsymbol{x}_{\mathbf{m},i} = \boldsymbol{x}_{i,j} - \frac{\mathbf{q}_{i+j}}{m_{i+j+1}}$$

$$\lambda_{N,k,j} = k_k - \frac{[1/k_B - N]}{\frac{1}{N_k}}$$

Figure by a great to the first

$$\chi_{n+1} = (\lambda x_0 - \sqrt{\lambda_0})^2$$

Ы

 $g \equiv 1004$  ) arrows in 9004 (6.3). .01

L+abrac

$$\begin{aligned} w_{0,1} &= 2x_{1} - 74y^{2} \\ w_{0,1} &= 7x_{1} - 74y^{2} \\ u_{1} &= 2x_{1} - 74y^{2} \\ &= -x_{1} 2x_{1} - 72y^{2} \\ &= -x_{1} 2x_{1} - 72y^{2} \\ w_{0} &= 2x_{1} - 72y^{2} \\ &= -x_{1} 2x_{2} - 740 - 20z^{2} \end{aligned}$$

#### [... t.

From Newton Bhanconine 565.

$$z_{ij} = i_{ij} \cdot \frac{\tilde{\eta}(\mathbf{v}_i)}{\tilde{f}(\mathbf{v}_i)} \tag{3}$$

<sub>യോട്</sub> Lordania

$$\eta_{10} = y^{-1} + S_{2} = 0$$

$$q_{1,1} = -1000 \pm 200 \pm 30$$

$$\begin{split} P^{(i)}(\mathbf{r},\mathbf{q}) &= \mathbf{v}_{\mathbf{q}}(\mathbf{r}), \\ \nabla \mathbf{v}_{\mathbf{q}}(\mathbf{r}-\mathbf{q}_{\mathbf{q}}) &= (1)^{2} \cdot \mathbf{v} \cdot \mathbf{v} \cdot \mathbf{v} \cdot (1) - 7 = -3, \\ \nabla (\mathbf{v}_{\mathbf{q}}) &= (1) \cdot \mathbf{v} \cdot \mathbf{v} \cdot (1) \cdot \mathbf{v} \cdot \mathbf{v} \cdot (1) \cdot \mathbf{v} \cdot \mathbf{v} \cdot \mathbf{v} \end{split}$$

Set with the  $(x_0, x_0)$  and  $(x_0)$  solutes the  $(0, x_0)$ ŋΥ

$$x_1 = \frac{1}{2} \left( \frac{3}{6} \right) \times 10^{-12}$$

$$(202) = 1, 2, 39$$

f(x) = 1, 1, 10f(x) = 1, 1, 10f(x) = 1, 10

$$\int G_{k}(S^{k}) = \frac{n}{2}(f_{1} + 2f_{2} + f_{2})$$

paggit, belevilla intbi

$$\gamma = \frac{6}{5} \hat{\eta}_{(2)}(h_0) = \frac{1}{5} (9 - 2 \times 4 - 15) - 12$$

 $_{\rm coll}$  /  $_{\rm tiple}$  in a resolute by Trap cholds in the -12Since  $\hat{\eta}(\cdot)$  is second only as polytic as  $\hat{I}_{i}$  for

Supra (francij):

$$P = -451e_{1} \cdot 4$$
  
 $P = -451e_{1} \cdot 4P$ 

Now exact on unit-

$$\begin{split} \frac{\partial}{\partial z} dz &= \int_{0}^{z} (1+z+dz^{2}) \, dz \\ &= \int_{0}^{z} (1+z+dz^{2}) \, dz \\ &= \frac{\lambda^{2}}{2} - \frac{4z^{1-2}}{3} = \frac{3z}{3} \end{split}$$
   
 Linear Figure Approximate set is

$$=\frac{32}{2}$$
 =  $2 = \frac{2}{3}$ 

Ц.  $\{a_i\}_{i=1}^n$ 

$$\frac{\partial \mathcal{L}}{\partial z} = 0.25 g^2 \qquad (\phi = 1.5) e^{-3g}$$

$$2e = 3$$

librotive equation in twokerors in pixel(  $\pm_{bost}$  $m_{i}^{\mathrm{opt}}$  ) a knight above and a figure  $m_{i}$  . Here

$$\begin{aligned} & \mathcal{Y}_{0-1} &= \gamma_1 = \gamma_1 \, (p_{0-1}, p_{0-1}), \\ & \mathcal{Y}_{1-1} &= \gamma_1 + \gamma_2 \times 2p_1 \, \sqrt{3} \ . \end{aligned}$$

$$\rightarrow 0.05779^{\mathrm{H}}_{\mathrm{AG}} = \zeta_{\mathrm{min}} + y_{\mathrm{p}} = 0$$

وعالين <sup>№</sup> – Ф поћемнерца; сп

) for 
$$y_i^2 \cdot y_j \cdot \gamma_i = \alpha$$

$$0.29 > 3 - y = 1 - 0$$

$$\begin{array}{lll} -1 & \lambda & -\frac{1}{2}\sqrt{3} - i & \beta \\ -1 & \lambda & -\frac{1}{2}\sqrt{3} + i & \beta \end{array}$$

Brites spirit fat subjete oval 5 Nov dedrađeliya Elebje.

$$\frac{-3\sqrt{r^2 + 900^2 + 3r^2 + 900}}{2^2 + 9r^2 + 250} = \frac{3^2 + 9r^2}{3^2 + 9r^2} = \frac{3^2 + 9r^2}{3^2 + 250} = \frac{3^2 + 250}{3^2 + 200} = \frac{3^2 + 250}{3^2 + 200} = \frac{3^2 + 36r^2 + 36r^$$

1 F. (a)

$$\begin{aligned} & \text{Rat} = e^{4} + x_{1} - y + 0 \\ & \text{C}(1) = 8e^{2} + 1 \\ & \text{N=0 equation for elements}, \\ & x_{2} = -x_{2} - \frac{f(x_{1})}{f(x_{2})} \\ & \text{Rat}(1) = \frac{g^{2}}{g^{2}} + 4x_{2} - 6 \\ & \text{C}(x_{2}) = \frac{g^{2}}{g^{2}} + 4x_{2} - 6 \\ & \text{C}(x_{2}) = \frac{g^{2}}{g^{2}} + 4 \frac{g^{2}}{g^{2}} - \frac{g^{2}}{g^{2}} - g \\ & = \frac{16x_{2}^{2}}{g^{2}} - 4 \frac{g^{2}}{g^{2}} - \frac{g^{2}}{g^{2}} + \frac{g}{g^{2}} - g \\ & = \frac{16x_{2}^{2}}{g^{2}} - 4 \frac{g^{2}}{g^{2}} - \frac{g^{2}}{g^{2}} + \frac{g}{g^{2}} - \frac{g}{g^{2}} \end{aligned}$$

$$= \tau_{k,n} = \frac{(r_k)^2 - 2}{4\lambda_k^2} = \lambda$$

١. 46)

There 
$$x_1 = 2$$
  
 $f(x) = x^2 + 1 + 4x + 4$   
 $f'(y) = 2x^2 + 2x + 1$   
 $f'(y) = 2x^2 + 2x + 1$   
 $f'(y) = f(2) = 2$   
 $f'(y) = f'(y) = 12$   
 $f'(y) = \frac{x}{12} + \frac{x}{12} + \frac{x}{12} = \frac{x}{12}$ 

12. (a)

$$\label{eq:tau_sum} \text{NaWF}_{A} = r_{A+1} = \frac{r_{A}}{2} + \frac{2r}{2q_{A}} r_{A} r_{A} = 0.3;$$

25 CHAMINE HOUSE STOKE CHANGES

$$A_{A_1} = Y_A + C = Y_A + C = Y_A + C$$

$$C = \frac{\Delta}{2} + \frac{C}{8\pi}$$

$$C = \frac{\Delta x^2 + 8}{8\pi}$$

$$\chi = \frac{\phi}{2} = 1.5$$

15 121

$$\int\limits_{0}^{\pi/2\pi} f(z) \cdot z z = \frac{t_0}{2\pi} (y_0 + y_0) \cdot \mathcal{O}(y_0) \cdot z_0 + \dots + y_{n-1} d$$

$$\frac{2\pi}{4\pi} = \frac{1}{8} \times \frac{$$

14. (0)

$$\operatorname{Hyp}_{x} = \frac{\pi}{2\pi} = \frac{1-\pi}{\pi}$$

Luigi z Metro d'Haussonis

$$\begin{aligned} & z_{n-n} = z_1 + r \operatorname{BV}_{n} y_2 \\ = & v_{n-1} = z_n \cdot \operatorname{BV}_{n-1} \\ \Rightarrow & v_{n-1} = \frac{r}{n} \frac{1 - \frac{1}{n}}{n} x_n \cdot \frac{x_n}{n} \\ & \operatorname{Constabley}(1) \end{aligned}$$

$$\Delta (x,y) = \frac{1}{r} \leq \epsilon$$

$$\Delta t \leq 2 - \frac{\Delta t}{2} + \epsilon^{-2}$$

§g, rikadmuπ, pejri i-a No va ce - č a Tis St.

[45 nawon explision to 85 95 90 tellor 6

$$x_{i} = -y_{i} = \frac{Rx_{i}^{2}}{\sigma(x_{i})}$$

$$\Gamma_{\alpha} \, \rangle = e^{\alpha} - \frac{1}{2}$$

$$x_{i,j+1} = x_i = \frac{\mathbf{q}^{\mathbf{v}}}{6\pi^{\mathbf{v}}}$$

$$\mathbb{E}_{\mathbf{H}} = -\mathbf{h}_{\mathbf{h}} = -\frac{\mathbf{h}_{\mathbf{h}} \cdot \mathbf{S}^{T} + \mathbf{h}^{T}}{\mathbf{S}^{T}}$$

$$= \frac{\sin(x-9) - 1}{\cos^2(x-9)}$$

$$q_{ij} = \frac{e^{\alpha_i}(q_i - \frac{q_{ij}}{\sigma^{\alpha_i}})}{\sigma^{\alpha_i}}$$

 $\epsilon_{\mathbf{J}_{1},\mathbf{A}_{2}}=-1$  os quen.

$$a_0 = [6 - 1-7] + 1] e^{-3}$$
  
= 0.71835

- E (c)

Т на укол роди, са то се во ин 5 а.

უქედედის— 6+*ი*ნთ ≪

$$f(x) = 1 + \delta^{m}$$

 $\square \in \mathbb{N}_{\mathcal{O}}(\mathbb{N}^{1}(\mathbb{R}))$  is a manufactor of the formula is

$$\chi_{n+1} = \chi_n - \frac{\partial \chi_n^n}{\partial \chi_n^n}$$

Here 
$$\theta(x,y) = x_0 \cdot \theta^{-1}$$

 $_{2}$  T  $_{4}$  Nation  $\Delta a_{1}$  it sometimes we formula is

$$\begin{aligned} z_{n,j} &= z_{n,j} + \frac{z_{n,j} + y}{1 + e^{-z_{n,j}}} \\ &= \frac{e^{-z_{n,j}} z_{n,j} + z^{-z_{n,j}}}{z_{n,j}} = z_{n,j}^{-1} + \tau_{n,j}^{-1} + \frac{\tau_{n,j}^{-1}}{z_{n,j}^{-1}} \end{aligned}$$

17. (6)

$$\lambda_{i,j} := \frac{1}{2} \left[ \lambda_i + \frac{\partial}{\partial z_i} \right]$$

 $d\Gamma(\Delta) = \operatorname{conj}_{\mathcal{C}} \operatorname{conj}_{\mathcal{C}} \mathcal{C}$ 

$$\begin{aligned} v_{s-1} &= v - \alpha \\ v &= \frac{1}{2} v_{s} - \frac{\kappa_{s} v}{v_{s}} \\ -\frac{2}{2} v_{s} &= \alpha + \frac{\pi}{v_{s}} - \frac{\alpha^{2} + \beta^{2}}{\alpha} \\ -\frac{2}{2} v_{s} &= \omega^{2} - \kappa \\ -\frac{\pi}{v_{s}^{2}} &= \frac{\pi}{a} \end{aligned}$$

o - E \$2 (Stait Settler valledman, e. couter manage) Contains the  $u(\epsilon)$ .

10. (a)

Lordin Elliption as rigintegralable

$$f(x) = cy^{2}$$

$$f'(x) = cy^{2} + y^{2} = cy^{2}(x + 1)$$

$$f''(x) = cy^{2} + y^{2} + y^{2} = cy^{2}(x + 1)$$

Figure  $v^{-1} u \simeq v^{-1} d$  , are the result of unconstant. t -MD Film value of fit() is played to  $t \in \mathbb{R}_2$ OCCUPANT  $\frac{1}{2} = 2$ 

Su

$$|\operatorname{Max} \big|_{L^{2}(\Omega)}\big| = \operatorname{Lab}(x_{-1}, y_{0}^{*} + q_{0})^{2}$$

in now prilimon's insception in a little bounds.

$$\frac{h^2}{2\pi} \left( \log x - e^{\alpha y} \xi \right) = 1/\epsilon_0$$

 $W + \Theta M$  solumber of  $G_{i} \otimes G_{i}$ 

$$\begin{aligned} \partial_t &= \frac{\partial - g}{\partial t} \\ \partial_t &= \partial_t \log g + \frac{\partial^2}{\partial t^2} = 2\pi \left[ \operatorname{Co}(\xi) \right] \cdot \frac{\partial_t - g}{\partial t} \\ &= \frac{\partial^2}{\partial t} (2 - 3) (\operatorname{Co}(\xi)) \cdot 1 \le g \le g \\ &= \frac{\partial^2}{\partial t^2} (2 - 1) \left( \operatorname{de}_t \right) = \frac{\partial^2}{\partial t} \partial^2 \end{aligned}$$

have putting

$$\label{eq:taylor} T_{abb,a,a} = \frac{1}{2} - \tau_{ab} a.$$
 We get

$$\left|\frac{f^2}{4} g^2 - \frac{1}{6} \times 10^{-3}\right|$$

$$\Rightarrow \qquad 77 = \frac{10^4}{10^4}$$

$$\omega = -b = \frac{\int d^2r}{r}$$

 $\mathrm{Int}(0.55 + \mathrm{id}\log\log p) = 20$ 

$$=\frac{2}{N}x^{2}+\frac{2-i}{M(-1)gh}-i\chi ggg$$

- <u>ç</u>. (2)

$$\begin{split} \mathbf{Y}_{i,j} &= \mathbf{Y}_{i,j} - \frac{\sqrt{2} \mathbf{x}_{i,j}^{T}}{\sqrt{2} \mathbf{x}_{i,j}^{T}} \cdot \mathbf{x}_{i,j} - \frac{\mathbf{Y}_{i,j}^{T} + \mathbf{1} \mathbf{1} \mathbf{Y}_{i,j}^{T}}{2 \mathbf{x}_{i,j}^{T}} \\ &= \frac{\sqrt{2}}{2\pi} \left[ \mathbf{x}_{i,j} - \frac{\mathbf{1} \cdot \mathbf{x}_{i,j}^{T}}{2\mathbf{x}_{i,j}^{T}} \right] \end{split}$$

20. (a)

The course is  $\chi(x) = \chi^2 - (3 - 1)$ 

Nemur Baansa (Leta) drioduaran s

$$\begin{aligned} z_1 &= x_2 - \left[ \frac{2(x_1)}{2(x_2)} \right] \\ &= \frac{2(x_2) - 2x_1}{2(x_1) - 2x_2} \\ &= \frac{2}{2} \left[ -\frac{2}{2} \frac{2}{2} - \frac{3}{2} \right] + \frac{2}{2} \frac{2}{2} + \frac{1}{2} z \\ &= \frac{3}{2} \frac{3^2 - 1}{2 \cdot 2 \cdot 2} - 3 \cdot 607 \end{aligned}$$

 $\Gamma^{-1}$  Hisporphi Toble lader on program  $_{1}$   $_{1}$   $_{2}$   $_{2}$   $_{3}$   $_{4}$   $_{4}$ 

21. (6)

$$I = \frac{1}{8}(35 - 45 + 35 - 55 - 5)$$

$$= \frac{2}{8}(3377 + 185, 95, 19 - 9 + 165 - 480, 95, 19 - 9 + 165, 95, 19 - 9 + 165, 19 - 16$$

th:

By wheat one piving  $\frac{1}{2}$   $\mathbb{F}[\hat{\mathbf{q}}](\hat{\mathbf{r}})$  , where  $M(\hat{\mathbf{q}},\hat{\mathbf{r}})$  and

essent

he placed by using think o's related

$$I = \frac{1}{2} (\xi_1 + 1)^2 + 2\xi_2 + \xi_3 ((\xi_1 + \xi_2 + \xi_3))$$

$$P = 60 \text{ segrecs} = \frac{3}{8} \text{ mass is}$$

$$I = \frac{1}{8} \times \frac{3}{8} \times [0 - 4 \times 16)^2 + 2\xi_3 (23) + 4\xi_3 (23) + 3\xi_3 $

53. (c)

$$\frac{2^{k}}{e^{i\phi}} = y = z_{ij} - g(t) \in \Omega$$

 $q_{ij}(y) \cdot d_{ij}(y) = c + 0.1$ 

The Mark Suggest Landaus

$$\begin{aligned} y_{1,k} &= (y_1 + f_2) \dots (y_k) \\ y_1 &= (y_1 + f_2 f_2) y_2 \\ y_3 &= (y_2 + f_3 f_3) = (f_3 f_3) \cdot f_3 \\ \dots &= (f_3 + f_3 - f_3) = (f_3 f_3) \cdot f_3 f_3 \end{aligned}$$

$$\eta_{A+B} = \frac{\partial v}{\partial x} + V + v$$

$$v = v_0 + 26v_0 \cdot v$$

$$\Rightarrow y = 0, 1.26(y_0, \chi_0^2) = 0.4.51 \times 100.00 = 0.4.01 \times 00.10 0.100 = 0.100 \times 100.00 = 0.100 \times 10$$

$$\begin{array}{ll} \omega & = \left( \frac{1}{2} + \frac{1}{2} (1 + 1) \right) \\ & = \left( \frac{1}{2} + \frac{1}{2} (1 + 1) \right) \\ & = \left( \frac{1}{2} + \frac{1}{2} (1 + 1) \right) = 0.07 \end{array}$$

$$\begin{aligned} q_{QM} & = r_1 + q_{M/2} - 600 \\ & = r_2 + 8r + 0 + 6 \times 6 + 4000 \\ 0 & = r_2 + 67 \log 86 \\ & = 000 - q_1 \times 7000, q_2 \times 6001 \\ & = r_2 + 67 \times 1000, q_3 \times 1000 \end{aligned}$$

 $p_{ij} = p_{ij} + (1 + p_{ij} + 2 \cdot 3 \cdot 3 \cdot 4)$ 

์ (กังทั้งรูปฏาสูติคล ใช้เป**าด**เรือไปส์

2세 (네

Letter is fight of dealing of the late of the state of th

$$\begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 \\ 2_{21} & 1 & 0 \end{bmatrix} \begin{bmatrix} 0 & 0_{12} \end{bmatrix}$$
$$a_{11} = 0 \cdot a_{22}$$
$$a_{12} = 0 \cdot a_{13} = 1$$
$$a_{23} = 0$$

$$\frac{4}{10} = \frac{4}{2} = 5$$

$$\frac{1}{4\pi} \left[ \frac{1}{2} + \frac{1}{2\pi} \right] = \frac{1}{2}$$
  
 $\frac{1}{4\pi} \left[ \frac{1}{2} + \frac{1}{2\pi} \right] = \frac{1}{2}$ 

Salong pus Kirla Macked Aniik

Aut pretix is none of the Biologic given

See all using the distributions parallel to  $\phi_1$  in (27),  $\phi_1=0$  and  $\phi_2=1$ 

$$\begin{vmatrix} z & 1 \\ z & -1 \end{vmatrix} = \begin{vmatrix} z_1 & 0 & 0 \\ z_2 & z_2 \end{vmatrix} \begin{vmatrix} z_1 & z_2 \\ 0 & z_3 \end{vmatrix}$$
$$z_1 = 2 z_1 z_2 = 0$$

$$= \frac{1}{i_1} - \frac{1}{2} - 2.5$$

$$i_2 = i_1 + 2.5 - i_2 = 1$$

$$\begin{aligned} & + 2 \times \frac{1}{2} A \log_2 (-1) \\ & + 3 \times 4 \times 8 \\ & + 3 \times \frac{72 - 1}{4 - 251} + \left[ \frac{1}{2} - \frac{9}{2} \right] \frac{1 - 63}{4 - 2} \Big] \end{aligned}$$

φροβινου και idald...

75. jai

$$\begin{aligned} |A_{n+1}| &= |R_n|^2 \frac{r(n)}{r(n)} + |R_n|^2 \frac{r^2}{2\pi} \frac{R_n}{2\pi} \\ &= \frac{r^2 + 2r}{r^2} + \frac{1}{2} \left( \frac{R_n}{r} \cdot \frac{R_n}{r} \right) \end{aligned}$$

28 (6)

 $\frac{1}{10} \frac{g_{\rm eff} (r_{\rm eff})}{g_{\rm eff} (r_{\rm eff})} = 0.013.6 \, {\rm Psc}$   $\frac{1}{10} \frac{10^{11} {\rm eff}}{100} \left( {\rm eff} \right)^{2} + 0.0017 \, {\rm eff}$ 

Perjohancia ski konce

$$\begin{aligned} &\frac{g^2 + e^2 + e^2}{e^2} = \frac{1}{e^2} = \frac{1}{e^2} + \frac{1}{e^2} \\ &= e^2 + e^2 + \frac{1}{e^2} = \frac{1}{e^2} + \frac{1}{e^2} = \frac{1}{e^2} = 0 \end{aligned}$$

$$& (2 + e^2 + e^2) = \frac{1}{e^2} + \frac{1}{e^2} = \frac{1}{e$$

Z/. (v)

$$\begin{split} y_{(1)},y_{(2)} &= (0,10) \cdot z_1 + 0.9 + 1 \\ v_{(1)} \cdot z_1 &= (0.22 - 10) y_1 \cos y_1 + 0.6 - 1 \end{split}$$

i po generatin tika shi n

$$\begin{split} \frac{\mathrm{d} g}{\mathrm{d} g} &= \frac{\mathrm{d} g}{\mathrm{d} g} \\ &= \frac{\mathrm{d} g}{\mathrm{d} g} + \frac{\mathrm{d} g}{\mathrm{d} g} \\ &= \frac{\mathrm{d} g}{\mathrm{d} g} + \frac{\mathrm{d} g}{\mathrm{d} g} \\ &= \frac{\mathrm{d} g}{\mathrm{d} g} + \frac{\mathrm{d} g}$$

23. (a)

$$z_{s_{n}} = z_{1} \cdot \frac{f(z_{\underline{s}_{n}})}{c(z_{\underline{s}_{n}})}$$

$$\begin{aligned} x = 2, & \quad \forall y_0 \in (2 + 2)^2 + 3 = \sqrt{2} \\ & \quad f(x) = 1 + \frac{1}{2\sqrt{2}} \\ & \quad f(x_0) = 1 + \frac{1}{2\sqrt{2}} \\ & \quad f(x) = -x_0 + \frac{4\pi x_0}{2\pi x_0} = 2 + \frac{\sqrt{2} - 1}{1 + \frac{1}{2\sqrt{2}}} \\ & \quad = -x_0 + x_0 + \frac{4\pi x_0}{2\pi x_0} = 2 + \frac{\sqrt{2} - 1}{1 + \frac{1}{2\sqrt{2}}} \end{aligned}$$

že. ie:

$$\begin{aligned} & \frac{a_{1} + \frac{1}{2} a_{2}}{1 + \frac{1}{2} a_{3}} \\ & = \int_{-2}^{2} \frac{1}{2} a_{2} - a_{3} - \frac{1}{2} \\ & = \frac{1}{2} \frac{1}{2} a_{3} - \frac{1}{2} a_{3}$$

#### au. (h)

if his effort matrix is applied a given and  $p_{ij}$  $=0.04 \pm 10$  mag  $\sim 1.9$ 

 $A_{\rm OH}^{-1}$  (100 V.3 (  $v_{\rm p} = \frac{1}{2} \cdot \frac{9}{2} = 5$ 

Note that  $\mathcal{C}(r_0) \cap (r_0) = \{r_0, \ldots, r_0 \mid \text{that} \}_{i=0}^n$ 

Now of terms are

200 a'  $= 2^{-1}$  formion  $z_1 = \frac{8}{2} + 2$ 

Was since  $\Phi v_{ij}^{(i)}$  is, i.e. i.e. regions where  $v_{ij} \in A$ and v. = 2 amostor are neighbor

$$z_0 = \frac{10.3}{5} = 2$$

 $\begin{aligned} \mathcal{I}(\mathcal{A}_{\mathcal{S}}^{k} = \mathcal{O}_{\mathcal{S}}) \\ \mathcal{I}^{k} = \mathcal{I}^{k} + \mathcal{I}^{k} \cdot (k+1) \end{aligned}$ 

30 CH in Allian a covergable sequence if it is get to Ciliproffic gi

#### 원1. (네)

Twich oth raigh

$$\begin{aligned} & \int_{0}^{2\pi} \frac{dx}{dx} &= -c_0 \left[ \frac{x}{x} \right] \frac{x}{x} \\ &= -c_0 \left[ \frac{x}{x} \right] + c_0 c_0 (x, x) - c_0 c_0 x. \end{aligned}$$

Septembrie value da Villipeta Sint e sant plant.

$$z = \frac{2}{5}(100 - 16(34.092))$$

$$23 \pm 30 = 1 \pm 3 \pm 1 \pm 3$$

 $\label{eq:condition} \mathcal{D} = \mathcal{D}_{M} + 1 = 3 - 1 + 2$  (5),  $\mathcal{D}_{M} \leftarrow \text{without} \, \mathcal{D}_{M} + \text{without} \, \mathcal{D}_{M} + \text{without} \, \mathcal{D}_{M}$ 

EAR 
$$S = \frac{5 - 3}{9} = \frac{1.5 - 0.5}{8} + 3.5$$

The latter 
$$\mathbf{f} = \frac{1}{p} \frac{\left(\frac{1}{p+1}\right)^{\frac{1}{p}}}{\left(\frac{1}{p+1}\right)^{\frac{1}{p}}}$$

$$= \frac{1}{p} \left(\frac{1}{p+1}\right) \frac{\mathbf{f}}{\frac{1}{p+1}}$$

$$= \frac{1}{p} \left(\frac{1}{p+1}\right) \frac{\mathbf{f}}{\frac{1}{p+1}} + 4\mathbf{x} = \frac{1}{p} \frac{\mathbf{f}}{\frac{1}{p+1}} + 1 = 1$$

 $^{3}$ a i le doharota expecto naviesar i upropray

APA Pintas Parie – Exterior de

- 1 11-1 (<u>009</u>)

= 0.012450 ± 1.01≥

#### 32. (d)

Principator dille ensoyen de ignific

1160 н− қ.

Terioritatik  $z_{ij}$  (i.g.  $z_{ij}$   $z_{ij}$   $z_{ij}$ 

= 0.17% c = 0.02% keep provincibily

$$2\times 10^{-1} \times \frac{100 V^2}{8103^4} \simeq 9\times 15.4$$

$$\begin{aligned} & F(z, t = 3r + 2) \\ & F(z, t = 3t + 2)^{2} + 2 = 0.252 \\ & F(z, t = (1/2)^{3} + 2 \times 1.2 + 1 + 2 + 2.2 \\ & F(z, t = 2t) + \frac{r^{2} x_{1} t}{r^{2} (x_{1}^{2})} = 1.2 + \frac{3 \times 2b}{r \times 2} \end{aligned}$$

34 ĕcl.

Using sympacity fulls, the equipated value of

$$\operatorname{Corporation}_{\mathcal{A}}^{A} = \operatorname{Corporation}_{\mathcal{A}}^{A} =$$

$$-\frac{1}{2} \frac{1}{2} \left( \log \left( 2 \times 3 \right) - 5 \left( 3 \times 3 \right) - \left( \left( 1 + 6 \right) \right)^2 + 2 \cdot 5 \cdot 3 \times 3 \right)$$

$$\begin{split} \prod_{i=1}^{n} (x^{4} + 10) |\cos x| &= \left| \frac{x^{2}}{5} + 10 \right| x^{4} \\ &= \frac{x^{2}}{5} + 10 \times 4 = 240 \times 3 \end{split}$$

.. ഉള്ള പ്രകാര വേശം ചും നാന് വേശം ആവ നാർ

Je. (6)

$$\begin{split} \frac{\partial y}{\partial x} &= 2\eta x^2 - 4\eta \\ y &= \frac{\partial y}{\partial x} - 2\eta x y^2 \\ \partial (y + x + 1000010) \end{split}$$

$$\begin{aligned} y_1 &= (\lambda_1 + (n-2) + y_n^2) \\ &= (n+3)2 + 2 + (n+4) [ + (n+6) + 1 ] \\ y_1 &= (1 + \frac{1}{2})2((n+2) + 2x_1 y_1^2 + 2x_1 y_1^2) \\ &= (1 + (n+2)2 + (n+2)2 + 2x_1 y_1^2 + 2x_$$

26. Ed.

$$\begin{aligned} f(x) &= \{ \dots \mid x \in \mathbb{R} : x = 0 \\ f'(x) &= \bigcup_{x \in \mathbb{R}} f(x) = x \end{aligned}$$

Syltheylan Babya (1970-00) 010

$$r_{i_1\cdots i_l}=\ldots-\frac{2x_{i_l}}{c_{i_l}c_{i_l}}$$

 $c_{\mathrm{QCO}(1)} c_{\mathrm{CO}} = 1 \cdot (1 \otimes 1) = 57.92\%$ 

$$= x - \frac{5x - 200 (37.02) - 1}{5 - 200 (37.02)} = 9500$$

$$z_0 = 1...(202 - \frac{5 \times 1.7730 + 5 \cos \left[ (22.277) - 1 \right]}{5 \times 2000 (42.277)}$$

0.04:53

$$y_0 = 0.57 \, \theta = \frac{y_0 y_0 y_1 \, (9 \cdot 2 \cos(911) \, \theta) + y_0 y_0 y_0 y_0 y_0}{(0.29 \, \cos(911) \, 0.8)}$$
  
= 0.54 %  
 $y_0 = 0.54 \, \cos(911) \, (9.51)$ 

ЫD

$$\mathcal{G}_{(A,B)} = \{0,0\} = \{0,-2\}$$

$$(e^{-i\phi} - f(x_0) - ge^{i\phi} - f(x_0) + f(x_0)$$

– r<sub>ecolor is Polinhage metric is, wo have</sub>

$$S_{(200)} = f(x_0) = g(x_0 - 1 - 6) = 1 - (\pi - 1)$$

$$\frac{d}{dt}(S) = \frac{d^2 u}{dt}(S) = \frac{d^2 u}{dt}(S$$

peging terminasis et a

$$\begin{aligned} z &= -i \frac{4r^2 - \frac{1}{6r^2 $

 $j_{\rm m}$ rig (no values, we  $\phi$ 00

$$\begin{aligned} & \sum_{n \geq 1} \frac{1}{n} \left[ \frac{1}{2} \frac{d^{2}n^{2} - d^{2}}{2^{n}} \right] \\ & = \left[ \frac{1}{2} \frac{1}{2} + \frac{1}{2} \frac{d^{2}n^{2} - d^{2}}{2^{n}} \right] + 2.56 \end{aligned}$$

Here[3] Humanapar die Amerikasieh-Haldingschild  $p_{0}(s,i;t) = 0.000$ .

as astine color at any herafort

$$= \frac{\left| \text{List : } \sin(x) - h(x) \right| \exp(x)}{- \log x}$$

$$= \frac{|\text{Now } \sinh(x) - h(x) \log x}{|\text{Vertical } x|}$$

$$= \frac{3.33 + \frac{3.366}{10.06}}{|\text{O}(x)|} = 0.276$$

40. ie!

Can tail to  $x_1, x_2, \dots$  using the foreign resolution

$$x_0 = |\lambda_0| = \frac{2\pi n^{3/2}}{\left( \mathcal{O}(x_0) \right)_0}$$

$$|x| = \frac{\left[ \frac{1}{2} \left( \frac{1}{2} \frac{x^2 - 2}{2} \frac{y^2 - \frac{1}{2} x_0 + \frac{y^2}{2}}{\frac{1}{2} \frac{y^2 - \frac{1}{2} x_0 + \frac{y^2}{2}}{\frac{y^2 - \frac{1}{2} x_0 - \frac{y^2}{2}}{\frac{y^2 - \frac{1}{2} x_0 - \frac{y^2}{2}}{\frac{y^2 - \frac{y^2 - \frac{y^2}{2} x_0 - \frac{y^2}{2}}{\frac{y^2 {2}}}} \right]}$$

$$\phi_0 = 2(x_1 + 6)(x_2 + 2_1)x_1 + 6$$

 $t_2 = 240\,$  for + , with the converges in an infinite Helps (i.e., the sector, converges)

#### 41. Sal

#### 42 Sor

$$\frac{y + y_{0}}{y_{0}} = \frac{1}{1} \underbrace{\frac{2}{y_{0}}}_{y_{0}} \underbrace{\frac{3}{5.00}}_{y_{0}} = \frac{1}{5.00}$$

$$= \frac{\sqrt{2}}{1 + \sqrt{2}} (2x - \frac{6}{y_{0}})(y_{0} - y_{0}) + 2x + \frac{1}{2}(1 - 2.33 + 2 - y_{0})$$

$$= \frac{2.23}{2} - 1.35$$

#### 46 Ent

#### 44 (U)

$$\operatorname{Diet} = -\frac{\kappa^2}{16^n} f(\xi) \times \kappa$$

Short Sians it all otherwise object, injuring a superior so to we do it as the sign of edge. Here is the sign of the formation of the sign 
Similarly of Simpara is ture

$$\mathsf{Fm}:=-\frac{I_{\mathrm{c}}^{K}}{2\pi}I^{2}\eta(2)\otimes P$$

Since sionally we wears positive eigh or the direction against a page.

Here 
$$a(x) = a(x) = a^{\frac{1}{2}} a(x) = 0$$

\$2.155 for its evalues 0.15, length short year elements of the integral \$2.00 curso.

thateline with (I) and (II) will pompet.

#### <5. (±)

$$\frac{\partial u}{\partial x} = \Delta x + 1 + 2 \log_2 x_0 t$$

#### $A_{i,j} = U_{i,j,j} = \eta_{i,j}$

Mexicotive or collection of a digraph the lock on a

$$\begin{aligned} \dot{x} &= \lambda (0.1 \ x_0) = 0.25 \times 14.038 \\ \dot{x}_2 &= 0.0 \left[ (1 - \frac{1}{2} \lambda_1 x_0 + \frac{2\pi}{2}) \right] \\ &= 80.0 \ (x + 0.2) \\ &= 0.0 (x \times 0.0 + 0.0 + 0.08) \\ &= 40.0 (x \times 0.0 + 0.0 + 0.08) \end{aligned}$$

$$s_{p} = \frac{m^{2}}{2}b + \frac{1}{2}h(s_{p})(\frac{s_{p}}{2})$$

$$= (0.95) \Omega \cap v_0 + 0.44 \mu$$

$$= 0.2(4 - 0.1 - 4) + 0.90$$

$$\hat{S}_{ij} = \{\hat{S}^{ij}\}_{ij}^{T} - \hat{S}_{ij} \hat{\sigma}_{ij} + \hat{S}_{ij}^{T}\}$$

$$\begin{aligned} & & = \frac{1}{6}(x + 2k_2 + 9k_3 + k_4) \\ & + \frac{1}{5}x(x + 2k_3)(999 + 2k + 984 + 966) \\ & = 0.58 \end{aligned}$$

**4**0. [5]:

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix} = \begin{bmatrix} 2 & 2 \\ 0 & 0 \end{bmatrix}$$

In given that the decomposition is needed by the second of the above we will solute that we provide the term of the ways of the second of the

47. (3)

ply neositivalizations (a kie that is broken subtunique) in the last product of a root of the last product of the contract which of this than an is track that is some subtunities and taken month (a, 5) I en x viey a military (b) For the entraction (a, 5) in the last product of the last product (a, 5) in means (b) (b) of the last product (a, 5) in means (b) (b) of the last product (a, 5) in the Board to the formula.

re. So

$$R(y = y) + 4x + 4x$$
  
 $R(y = 2x - 4)$   
 $R(y = 2x - 2x)$   
 $R(0) = x - 2x(4x - 2x)$ 

 $\{\phi_i\}_{i=1}^n$  . This could not be

$$q_{0} = q_{0} - \frac{2 \left( \frac{1}{2} \frac{1}{1 + \frac{1}{2}} \right)}{2 \left( \frac{1}{1 + \frac{1}{2}} \right)} = 2 \cdot \frac{1}{2} - \frac{5}{2}$$

$$\frac{1}{2} \frac{51}{2} = \frac{31}{2} = 10 \quad 4 = \frac{1}{4}$$

Bureanners with

$$\begin{aligned} z_{N} &= \left[ x_{1} - \frac{\left[ x_{1} + x_{2} \right] Q(x_{1})}{f(x_{1}) - f(x_{1})} \right] \\ &= \frac{f(x_{2} - f_{2})x_{2}}{1 - f_{2}} = \frac{-\frac{1}{2} \times \frac{3}{2}}{4} = \frac{\left[ \frac{x_{1}^{\frac{N}{2}}}{2} \right]}{4} \\ &= \frac{7}{2} \end{aligned}$$

49. Sel.

$$(\phi_1) = -2 = 66 - 400 + 0.50^{2}$$
  
 $(\phi_1) = \phi_1 - 60 + 0.00^{2}$   
 $(\phi_1) = 0$ 

 $x_{\infty} = 0$ For New Land Layers at Mattee.

$$y = \frac{2\left(\cos \frac{\pi}{2}\right)}{4\left(\cos \frac{\pi}{2}\right)} = \frac{-2\pi}{4}$$

$$= -i_3 = -i_3 = -i_4.$$

$$|\chi_{a}\rangle = |\chi_{a}\rangle + |z\rangle - |\eta_{a}\rangle + \frac{\pi}{2}$$

<u>5</u>6 3el

$$\begin{aligned} & \eta(\hat{q}) = \nabla_{1} - 2\hat{q}^{2} - 3\hat{q} = 1 \\ & \dot{\eta}(\hat{q}) - 2\hat{q}^{2} - 3\hat{q} = 1 \\ & \dot{\eta}_{3} = 1 \\ & \dot{\eta}_{4} = \nabla_{4} - \frac{1}{2}\frac{\hat{q}^{2}}{2\hat{q}^{2}} \\ & \dot{\chi}_{4} = \nabla_{4} - \frac{1}{2}\frac{\hat{q}^{2}}{2\hat{q}^{2}} = 1 - \frac{|\hat{q}|}{2|\hat{q}|} = 0.5 \\ & \dot{\chi}_{5} = 0.5 - \frac{\hat{q}(\hat{q},\hat{q})}{2\hat{q}(\hat{q},\hat{q})} = 1 - \frac{|\hat{q}|}{2|\hat{q}|} = 0.5 \\ & \dot{\chi}_{5} = 0.5136 \end{aligned}$$

51. Sol.

52 (3.8 c) Expense about some or if  $z_{ij} = \frac{z_{ij}}{n} \cdot \frac{z_{ij}}{n}$ 

$$\begin{aligned} \hat{\mathbf{r}}_{i} &= \frac{t_{0}z_{0} - \frac{1}{2}z_{0}}{t_{0} - t_{0}^{2}}, \\ & \dots = z_{0} - \left(z_{0} - z_{0}^{2}\right) \cdot \left(z_{0} - \frac{1}{2}z_{0}\right), \\ & = t_{0} - \left(z_{0} - z_{0}\right) \cdot \left(z_{0} - \frac{1}{2}z_{0}\right), \\ & = \frac{1}{2}z_{0} - \frac{1}{2}z_{0}, \\ & = \frac{1}{2}z_{0} - \frac{1}{2}z_{0}, \end{aligned}$$

Painted & (b) all a simplification reduced.
 If a source is a lain \$5.50° (vitorial(d) are correct.)

52 (6)



Fig. ) value is from a clear the law  $_{\rm L}$  supplies that follows that execusions of  $\frac{1}{2}$  got while containne Leange.

Who keem reportable, we make the greath prints are considered diagram net colographs; the excelled after or graph at the time that we sha-ni dige y

$$\Delta = \{x, y\}$$
  
SR  
Find  $= + \frac{\partial}{\partial x} P(\xi) \times \partial$ 

11s) s<sup>2</sup>  $f(\{y\}) = \underline{+}.$ 

 $\mathcal{L}^{2}(x)=S\times B$ 

<sup>20</sup> k = 2 layli μα κίνη, πο α απίν π<del>ο</del>χαργα Circomorn essyl lappids instell

and diese entand i equiva in the development Julie.

54. So.:

$$\begin{vmatrix} c & \hline 1 & ... & \hline 78 \\ \hline 7(a) & ... & \hline 9.153 & 0.787 \\ a = 0. & 0 = 0.5 & 0.787 \\ \hline 6 = 0. & 0 = 0.5 & 0.787 \\ \hline 6 = 0. & 0 = 0.5 & 0.874 \\ \hline 6 = 0.0 & 0.0 & 0.0 & 0.0 \\ \hline 6 = 0.0 & 0.0 & 0.0 & 0.0 \\ \hline 6 = 0.0 & 0.0 \\ \hline 7 = 0.0 \\ \hline 7$$

Dy Simoan is 150 Burd

$$\begin{aligned} v &= \int_{0}^{2} C(x) dx \\ &= \int_{0}^{4} \left[ p_{1} + 4 p_{1} - p_{2} \right] \\ p_{1} &= p_{2}(1 + 0 p_{1}) \\ p_{2} &= p_{3}(1 + 0 p_{2}) \\ p_{2} &= p_{3}(1 + 0 p_{3}) \\ p_{3} &= p_{3}(1 + 0 p_{3}) \\ p_{4}(2) &= \frac{114}{2} \left[ 0 p_{2} - 4 p_{3}(4 + 0 p_{3}(2 p_{3})) \right] \\ &= 1.05p_{3} \end{aligned}$$

55. Got.

$$\frac{dy}{dz} = \frac{dy}{dz}$$

$$= \frac{dy}{dz} \{y_1 = y_2 \}$$

$$= \frac{1}{2} \{y_2 = y_2 \}$$

$$= \frac{1}{2} \{y_3 = y_4 \}$$

$$= \frac{1}{2} \{y_4 = y_4 \}$$

ბნ. გი

$$\begin{aligned} f(x) &= \frac{8}{9}x^{3} - \frac{8}{5} \\ &= \left[ \frac{1}{3(x)} - \frac{1}{9} \frac{1}{198} - \frac{1}{234} \right] \\ &= -\frac{1}{3} f(x) = \frac{8}{3} \frac{1}{3^{3}} \left[ 1.3 + 4 \left( 1.36 \right) - 3 \right] = -3 \end{aligned}$$

57 Sol

$$\int_{0}^{104} d^{3} d^{3} d^{3} d^{3} = \frac{n_{1}}{3} [g_{0} + 2[g_{0} + g_{2} - g_{3}] + g_{2}]$$

$$= \frac{1}{5} [3 + 2[10 + 40 - 96] + 13g_{3}^{2}$$

$$= 32$$

58. Set.

Sign that  $x \mapsto x \operatorname{dist}(x) \operatorname{dist}(x)$ 

$$x = A_{i,j} = 0, i = 0$$

Fold of search makes engages

М.: ТөрЫ асастуд н Ягиницев

bother determination are straightful for the large នេះក្នុងក្រាស់មន្ត្រីប្រជ

$$= \int_{0}^{\infty} f(x) dx$$

$$= \int_{0}^{\infty} f(x) dx + 2f(x) dx + f(x) + \dots + f(x)$$

$$= \int_{0}^{\infty} f(x) dx + 2f(x) dx + f(x) dx + f(x) dx + f(x) dx$$

$$= 2f(x) dx$$

#### 59. GJ.

Пенсилогово

$$\begin{aligned} \mathbf{x}_{i} &= 0 \mathbf{x}_{i} + 2 \mathbf{x}_{i} = 0 \\ 2 \mathbf{x}_{i} &= 2 \mathbf{x}_{i} + \gamma \mathbf{x}_{i} = 1 \end{aligned} \tag{6}$$

$$(2. + 2v_2 + v_1 - 5)$$

By a see that we can write

$$S(x_1+2x_2,\dots,x_n)\in \mathbb{R}$$

 $\mathbb{P}(\mathbf{c} = (0, \dots, n)) = 1$ 

$$a_1 = \frac{3 \cdot 2 \cdot y - x_0}{5}$$
 ......

$$x_{p} = \frac{1 - 2m - p_{q}}{g}$$
(2)

 $x_1 = \lambda x_2 + 3 x_4 = 5$ 

$$v_2 = \frac{3 + m + N}{2} \cdot$$
 (3)

Put:  $_{i} = 0$  ,  $_{i} = 0$  in equation (2),  $_{i} = 0.000$  Fig.  $_{i} = 0.000$  in equation (2),  $_{i} = 0.000$  in equation (3),  $_{i} = 1.000$  in equation (3),  $_{i} = 1.000$ 

#### DO. Sol.

$$|9x| = x - 10 \cos x \cdot \left(\frac{\pi}{4}\right)$$

$$= \frac{\pi}{4} - \frac{10}{22} = -1.293$$

$$|9(x) - x - 10 \cos x \cdot x'| \left(\frac{\pi}{4}\right)$$

$$= |11 \cdot \frac{8x}{32} - 30x'|$$

$$|x_1 - x_2| - \frac{\pi x_2}{x'(x_1)} = \frac{\pi}{2} - \left(\frac{10.103}{50.103}\right)$$

$$= \frac{\pi}{4} - \frac{6.999}{3.07} = 1.5626$$

#### En (6)

#### 95. Sal.

According to Newton-Dustrian Microsoft

$$\begin{aligned} & \chi_{i+1} = \chi_{i} = \frac{i(X_{i+1})}{2i(X_{i+1})} \\ & \chi_{i+1} = 3i(x_{i+1} + 3x_{i+1}) \\ & \chi_{i+1} = 2 + y_{i+1} + x_{i+1} \\ & \chi_{i} = \chi_{i} = \frac{i(1/3) x_{i+1}}{2i(1/3) x_{i+1}} \\ & = \chi_{i} = \chi_{i} = \frac{i(1/3) x_{i+1}}{2i(1/3) x_{i+1}} \end{aligned}$$

$$= 337 \cdot \frac{338 \cdot 338 \cdot 3^{222} \cdot 3^{10033}}{5 \cdot 3^{224} \cdot 3^{10033}} 337$$

$$Y_{ij} = (0,0)$$

#### 68. (a)

Try two moderate groups the past 1991% mongle estimate time, or two years of 1991 on 1991 for (degree to

#### 64 36L

No. 7 - 1990 CC

$$\int_{-\pi}^{\pi/2} (\sin x) \cos x dx.$$

$$= \frac{\pi^{2}}{3} (1 + \pi/4 + 3)^{2} (355 + 0.500)$$

$$= \frac{\pi}{3} (1702) = 17212$$

$$= \frac{\pi}{3} (47x + 3.38) dx = \frac{\pi}{3} (47x + 0.5000)$$

$$= \int_{-\pi}^{\pi} (67x + 0.5000) dx.$$

$$\begin{split} & = (-\epsilon \cos t - 6 \operatorname{Tr}) \Big|_{t=0}^{t=2} + (-\epsilon \cos t + 6 \operatorname{Tr}) \Big|_{t=2}^{t} \\ & = (2 + \epsilon) + (-\epsilon \cos t + 6 \operatorname{Tr}) \Big|_{t=2}^{t} \\ & = 1 + \epsilon + 1 + \epsilon + 2 \\ & = (-\epsilon \cos t + 6 \operatorname{Tr}) + (-$$

#### 65. Sul

$$\frac{dy}{dx} = -S_f + 2 \cdot \psi(0) = 1$$
 
$$+ 1 \cdot |y_i| < 1, \text{then solution} \sqrt{dG_i} + e^{i\phi_i} \cdot \text{solution}$$
 is  $x \in \mathbb{N}$  .

ტა. მი.

Example out of

07. (a)

Evillingewide in d

$$\begin{split} \int_{\Omega} f(x) dx &= \frac{a_0}{a} \left( (\frac{1}{2} + b_0) + \lambda^2 y_0 \right) \\ &= \frac{1}{2} \left[ (\frac{1}{2} + \frac{1}{2}) + \lambda^2 y_0 \right] \end{split}$$

Protesta and a la

$$\begin{cases} P(x|y_{11}^{*}) = \frac{H_{11}}{2}(x_{1} - y_{2}) - 4|x| \\ = \frac{P(\theta)}{2}((1 - y_{1}) + 4|4|4|) \end{cases}$$

 $I\mapsto \operatorname{crit}$  are noticed as well as the two results will see 26. Y.

43

In the to leaving rather to parculating Alfred Let  $4.2 \times 10^{-2}$  for  $6.0 ext{ Hz}$  ; here  $6.2 ext{M} ext{S} = 6.2 ext{M} ext{S} = 6.1 ext{M}$ long values. Therefore the property the terminal re-12.4.

69. Sci.

$$3^{10} = x^{10} \cdot x \cdot 1$$
  
 $4 = 1 \cdot 3 \cdot 3^{10} = -3.01 = 10.2$ 

Distribution and concerned form any dy Digestion artin is agentical

$$n = \frac{antooc}{a/2}$$
  
 $n > 6.88$   
 $n = 10$ 

$$\begin{aligned} f(x) &= x^{2} - x - 1 \\ f(x) &= 0 \\ f'(x) &= 0 f(x) \\ f(x) &= 4 \end{aligned}$$

26 Чемпол наслежниция <sub>под</sub>

$$\Delta_{i,j-1} = \lambda_i + \frac{\partial_{i,j} h^2}{\partial_{i,j} h^2}$$

$$\Gamma_{01} \circ_{q_1 + \cdots + q_n}$$

$$x_1 = 2x_1 - \frac{\eta_{111}}{r_{120}^2} - 1 - \frac{1}{4} = 0.76$$

$$|A_{i}| = |A_{i}| = \frac{|A_{i}|}{|A_{i}|} = 0.55 - \frac{|A_{i}|^{2} |A_{i}|}{|A_{i}|^{2} |A_{i}|}$$

$$0.19 - \frac{6.5 \, \mathrm{mag}}{9.5 \, \mathrm{mag}} = 0.893$$

### 71. Sul.

$$\begin{aligned} &\frac{\partial t}{\partial t} - S/2 = 1\\ &\frac{\partial t}{\partial t} - S^{2} = 1\\ &\frac{\partial t}{\partial t} = 0\\ &\frac{\partial t}{\partial t} = 0\\ &\frac{\partial t}{\partial t} = 0\\ &\frac{\partial t}{\partial t} = 0 + te^{-\frac{1}{2}t} \Delta t\\ &\frac{\partial t}{\partial t} = 0 + te^{-\frac{1}{2}t} \Delta t\\ &\frac{\partial t}{\partial t} = 0 + te^{-\frac{1}{2}t} \Delta t\\ &\frac{\partial t}{\partial t} + \frac{\partial t}{\partial t} = \frac{\partial t}{\partial t} + \frac{\partial t}{\partial t} + \frac{\partial t}{\partial t} = 0 + S\\ &= 0 + 2\left[S(0)^{\frac{1}{2}} - 1\right] = -2\\ &= 2\\ &\text{ After 1i at literation is } 1 = 2 \Rightarrow \Theta^{-\frac{1}{2}t} \geq 0. \end{aligned}$$

$$-\lambda x + \left[ \frac{\partial}{\partial x} - \frac{1}{2} \frac{\partial}{\partial x} \right] dy$$

$$= \frac{\partial}{\partial x} + \left[ \frac{\partial}{\partial x} - \frac{1}{2} \frac{\partial}{\partial x} \right] dy$$

$$\Big(m^2 - \int\limits_0^0 (2p^2 + 1) \, dt$$

$$\frac{1}{n} = \frac{1}{2} \left( \frac{n}{2} + \frac{n^2}{2} \right)$$

$$= 8 - 2 = 10$$

Model, we have 
$$z=\text{Hopertors}\, u u u u = \text{Hopertors}\, u u u u = u u u = 0$$
  $u = 0$ 





## **Transform Theory**

#### 7.1 Laplace Transform

in Laplace implies both there is secutions and a tree  $\kappa$  ding role and caute saying consists a Tile imposes probability on size of the matter  $\kappa$ 

Takehep: The algorithm of the colors of approximation (x,y) and  $y\in A$  and (x,y) equation (x,y)

and step: the substituty  $+_1$  abiding step and  $\alpha$  and  $\gamma$  algebraic manipulations

and stept the solution of the subsidiary could be a transportable bank in the solution of the given approxim

in think-ly like are constructed by a proportion to maps of the chief country in a larger are problem. This present a mode case the ladice of a problem and characters where the issues in a factor of integral which in this

In a walls and from operation of calculation operations on transmit will determine the calculation of calculations of periods and present to explore for a minimum entry of profile to the nucleit port of specific and profile to the profile to the period of specific to the period of 
For a plane the above above the wildering prime the channel control which thereby constraints and a particular solution is well as generated the channel and problem to a particular particular  $\mu$ .

We have  $\sim$  CDBS and the interest of obtainers an also be treated above in a gibbus.

#### 7.2 Definition

Let  $q_0$  be a time the i independent of the i we values of i. The limit  $q_0$  becomes for the regarded by  $1.86 \pm 3.86$  and  $q_0$ 

$$V(\theta, \theta) := \int_{0}^{\infty} e^{-t\theta} dt dt$$
(1)

stoy don't hall the integral costs. Also place in the non-day term is a solon complex of the  $\mathbf{a}(h^{*})$  and  $\mathbf{g}(h)$  are  $\mathbf{g}(h)$  and  $\mathbf{g}(h)$  are  $\mathbf{g}(h)$  and  $\mathbf{g}(h)$  are  $\mathbf{g}(h)$  and  $\mathbf{g}(h)$  are  $\mathbf{g}(h)$ .

$$\mathbf{F} = -\mathbf{V}_{\mathbf{c}}^{\mathbf{f}} \mathbf{f} + \mathbf{C}_{\mathbf{c}} \mathbf{c}.$$

renomican abot = erius i as il tan elita i Gred

for (f, s) step the mornor f as e , and smoothed T is symmed. We obtain a norm x (f) into T by f as when f is f and f and f is f.

#### Example

$$\delta T = 1$$

$$\delta (0)\delta' = \left[ g + 2g - \frac{g^{-1}}{g} \right] = \frac{g^{-1} + gg}{g} - \frac{1}{g}$$

Similarly books in the compact of the point or functions  $(x_i,y_i)$  be disclosed and it is earliefted.

## 7.3 Transforms of Elementary Functions

Implified typological policier of the original description of the contract of

$$|\eta| = (0.1) + \frac{1}{2}$$
 (8.2.9)

$$\underline{s}_{i} = 2(S_{i} - \frac{r^{2}}{s^{2}}) \cdot \operatorname{when} s_{i} = 0, 1/2, 3, .$$

$$\beta = \mu(e^{\gamma}) = \frac{1}{5 - \delta} \tag{2.8.6}$$

$$\Delta = Q_{\rm pl}(\omega_0) + \frac{2}{\omega_0^2 + \omega_0^2}$$
, (5.4.05)

$$|\psi_{1}-U_{1}(x)|dx = \frac{\pi}{4\pi} \frac{\pi}{-\pi}$$
 (8.549)

$$\beta \to (\operatorname{thrs.} M) = \frac{N}{g^2 - g^2} \tag{9.5-2.5}$$

$$T = \frac{1}{10000} \cos \theta = \frac{1}{12} \frac{6}{12} \frac{1}{12} \frac{1}{1$$

## 7.4 Properties of Laplace Transforms

## 7.4.1 Linearity Property

#### 7.4.2 First Shitting Property

$$\mathbb{P}[\{\xi_{i}\}] \to \overline{\xi}(g)$$
 from

$$(\sqrt{\sigma^2} \mathbb{I}_{+}^{n}) = \sqrt{r} (3 + \epsilon)$$

Spoke/invalenta propers Head into the following includes://is

$$1 - \omega(G_i) = \frac{1}{2\pi^{-N}}$$

$$S = \exp(2\frac{\pi i}{12 + \sin^{2}\theta}) \cdot (\pi \otimes \cos^{2}\theta + 2\pi i \pi i)$$

$$2 - 20^{-4.5} \sin \phi \xi = \frac{2}{(5 - a)^2 + c^2}$$

$$f = f(a^{0} \cos \phi_{i}) = \frac{f(a^{0} \cos \phi_{i})}{(a - a)^{0} + f(a^{0} \cos \phi_{i})}$$

$$\zeta_{i,j} = \frac{1}{2} \left( \mathbf{e}^{\mathbf{H}} \otimes \mathbf{r}_i \nabla_i \partial_i \nabla_j \mathbf{e}_j - \frac{N}{2\pi} \frac{1}{2\pi} \frac{N}{2\pi} \right)$$

9. 
$$u(e^{i\theta} \circ (A^{i\theta} \circ X)) = \frac{x - 4}{(x - a)^2 - 4}$$
  
where  $x : u(a) : u(a) = a > 0$ 

$$\int_{\mathbb{R}^{N}} f(t) = \int_{\mathbb{R}^{N}} t^{2}$$

$$\left[ (2d) : \int_{0}^{d} \frac{1}{dt} \right]$$

$$\|\Gamma\|_{L^2(S(\mathbb{R}^d)^2)} = \frac{n-1}{\omega + \frac{1}{2^2}}$$

$$\left\| \left( - \frac{1}{2} \log \log \left( r_i \right) + \frac{1}{2^{k-1}} \log^k r_i \right) \right\|_{L^2(\Omega)} \leq C^{\frac{k}{2}} \left\| r_i \right\|_{L^2(\Omega)}$$

$$\left[e^{-i(\sinh 2\theta)} \cdot \frac{h}{2} \cdot \frac{h}{8^3}\right]$$

$$\frac{1}{2} \left[ \frac{1}{2} \left( \frac{1}{2} \right)^{-1} \right] = \frac{1}{2} \left[ \frac{1}{2} \left( \frac{1}{2} \right)^{-1} \right]$$

## 7.4.3 Change of Scale Property

$$C_{i}^{*}(t) = C_{i}^{*}(t) \text{ Let } c_{i}^{*}(as) = \frac{1}{a} \widetilde{f} \left( \frac{a}{a} \right)$$

Preoi:

$$\begin{split} & \mathbb{E}^{\mathcal{O}}(xy) := \int_{\mathbb{R}^{N}}^{\infty} e^{-2\pi i x} dx^{2} dy^{2} \\ & = \int_{\mathbb{R}^{N}}^{\infty} e^{-2\pi i x} dy^{2} (i2h, i2h) \\ & = -\frac{1}{\pi} \int_{\mathbb{R}^{N}}^{\infty} e^{-2\pi i x} dx_{1} (i2h, i2h) \\ & = -\frac{1}{\pi} \int_{\mathbb{R}^{N}}^{\infty} e^{-2\pi i x} dx_{1} (i2h, i2h) \\ \end{split}$$

### 744 Existence Conditions

 $e^{-it^2/2} dt^2 = 0.05 + \int_{\mathbb{R}^2} e^{-it^2/2} dt^2 + 2 t dt^2$ 

970, is so the custom (e.g. e.g. that) is time. From the explanation sharped single  $\frac{1}{2}e^{i\phi}S(\omega)$  explains the  $\phi$ 

name III delayor tie nosta fall the obownus efficies am sufficient ratios. Tierri coatrol y

Consider the Artist constitutes the  $\Delta_0^2 \ge 10^4$  for  $\Delta_1^2 \ge 10^4$  for each transposition which is  $(2.0)^4$  and  $(2.0)^4$  for the second Artist is the dependent of the expectation and  $(2.0)^4$ 

### 74.5 Transferms of Decivations

 $1 - 2\pi c$  as original and  $2\pi c = c A/\mu_{
m DM}$ 

$$|\mathbf{r}[f(t)]| = |\mathbf{g}(t)|_{t=0} = \widetilde{\mathbf{q}}[g_t]$$

 $\lambda_{\rm eff}$  of the second first (a.e. it) contactives to positive qualification

$$\Pi^{**}(t) := \langle v^{**}(s) \mid v^{**h}(s) \rangle_{\mathbb{R}^{2}} \cdot \langle h^{*}(s) \rangle \qquad = \sigma_{-1}(t)$$

## 7.4.5.10Ifferential Equations, Initial Value Problems

We shall expressed the the representative interior of less a toronth  $-\gamma$  where

We degine to an indiangual of the  $\alpha$ 

$$\frac{\mathcal{L}^{2}-\mathcal{L}_{Y}=0, \mathcal{L}=\mathcal{L}_{Y}^{2}}{300+\mathcal{L}_{X}^{2}-\mathcal{L}_{Y}^{2}(0)+\mathcal{L}_{Y}^{2}} \qquad \qquad ...(1)$$

 $M^{2}$  for skart data 0.15 c (other final field by others) a offer to the near the restaurand  $\chi_{0}^{2}$  is the outside (happened of the system). In Latther k in either each physical k

IstStep: Teking the sace constraints of a LLS and TLS of the edge.

$$r(x^0) = 2\Delta(x^0) = 2\pi r(\phi) = -2\mu \eta$$

 $\forall x \otimes x (x \otimes x) : (\chi(x)) = x x(X \otimes \emptyset) \Rightarrow \text{ell} \ x(y^*) = y^* \ L(y) = \forall (x) + y (y) = \text{exp}(y)$ 

 $[S^{\prime}a^{\prime},S^{\prime}] \circ g(a) = \{ (g(a) + A_{\sigma}a) \in [g(b)] \mid (S(a) + S(a)) \}$ 

However, for t=t(y) were x=t(y) . The given

 $[g^{2}Y_{i}(t)+g^{2}(t)-f^{2}Y_{i}(t)]+g(t)(f^{2}_{i}+g^{2}Y_{i}^{2})+gg-f^{2}Y_{i}^{2}$ 

The latest  $\Theta$  billion access to we could be in Couldesting Vew map we have

$$(x_{i+1},y_i) = (x_{i+1},y_i) + \lambda_i(y_i + h_i)$$

**2nd Step**ceXistage Urgent adaptive coupling a gastraica (yester Detait in Lyell — este Erginy in exclinic co ga jaj i manator Sur Cilon

$$\mathcal{O}(s) = \frac{1}{\sqrt{1 + \alpha s}} \cdot s$$

Alway the spiritual

$$\gamma_{i}g_{ij} = \left[ \left( g + g_{ij} \gamma_{i} \beta_{i}^{*} \right) + \left( \gamma_{i} \beta_{i}^{*} \right) \left( g_{ij} \gamma_{i} - g_{ij} \beta_{i}^{*} \right) \left( G_{ij} \gamma_{i} - g_{ij} \beta_{i}^{*} \right) \right] + \left[ \left( g + g_{ij} \gamma_{i} \beta_{i}^{*} \right) + \left( g + g_{ij} \gamma_{i} \beta_{i}^{*} \right) + \left( g + g_{ij} \gamma_{i} \beta_{i}^{*} \right) \left( G_{ij} \gamma_{i} - g_{ij} \gamma_{i}^{*} \right) \right] + \left[ \left( g + g_{ij} \gamma_{i} \beta_{i}^{*} \right) + \left( g + g_{ij} \gamma_{i} \beta_{i}^{*} \right) \right] + \left( g + g_{ij} \gamma_{i} \beta_{i}^{*} \right) + \left( g + g_{ij} \gamma_{i} \beta_{i} \beta_{i}^{*} \right) + \left( g + g_{ij} \gamma_{i} \beta_{i}^{*} \right) + \left( g + g_{ij}$$

(gg) = g(g) = 0 , that g on  $p(g) \cap \mathbb{R}^{2}$  if  $(g \otimes g)$  the authorize

$$\mathcal{L}_{ij}^{(i)} \rightarrow \frac{\mathcal{L}_{ij}^{(i)}}{2} = \frac{\mathcal{L}_{ij}^{(i)}(A,A,A,A)}{\mathcal{L}_{ij}^{(i)}(A,A,A,A)}$$

ु altillia meleng ampah or or Di Ngjalliki (depengsa ny or bondi ), karabas na, neja ta ba dina id S g grythe in Hallzonich ans.

**3rd Step.** We recover (iii) in why by per in the actions, with the first table and chomosism per traditive state and a round from the leader so the the scales  $(y_{ij})^{-1/2}(x_{ij}^{*}(y_{ij})) imes 0$  with the c

#### Enumple 1.

## initial problem: Explanation of the head shaps

GO VE

$$M = M + M_{\odot}$$

$$y = y - y_0$$
  $y(t) = 1, y(0) = 1$ 

#### Salumon:

List Step.

2nd Step.

 $\mathbf{F}_{\mathbf{G}_{\mathbf{G}}}^{\mathbf{G}}$  (graphs to  $\mathcal{O} = (\mathbf{A})^{2}$  . In and

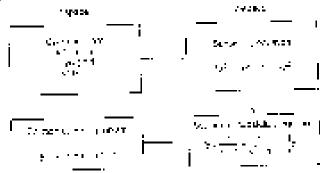
$$v = - (v + \sqrt{v}) + \frac{1}{v^2} Q = \frac{s + \frac{1}{v} + \frac{1}{v^2} v^2}{2^{\frac{3}{2}} + \frac{1}{v^2} + \frac{1}{v^2} + \frac{1}{v^2}} + \frac{1}{v^2} $

3rd Stop

. The property of the second of the elementation of the second of the s

$$\begin{split} & \mathcal{L}_{2}^{(1)} = \frac{1}{2} \left[ \frac{1}{2} \left( \frac{1}{2} - \frac{1}{2} \right) - \frac{1}{2} \left( \frac{1}{2} - \frac{1}{2} \right) \right] = 2^{n} + 8 + 6^{n} - 6^{n} \\ & \mathcal{L}_{2}^{(1)} = \frac{1}{2} \left( \frac{1}{2} - \frac{1}{2} - \frac{1}{2} \right) - \frac{1}{2} \left( \frac{1}{2} - \frac{1}{2} - \frac{1}{2} \right) + 2^{n} + 8 + 6^{n} - 6^{n} \end{split}$$

s e i Jagoromo Nigubel zvik omoravsku koji spotolit.



Lagrana des lateres de 41 - -

### Comparison with the usual method

the coddynican also be eased by the usual lighted armadiusing Laplace , unclosed as grown

$$y'' = y = t,$$
  $y(0) = 1, y(0) = 1,$   $y(0) = 0.$ 

29.30 by + justion

$$\frac{\partial^2}{(\nabla - f)(Q_{\alpha} - D_{\alpha})} \frac{\partial}{\partial x}$$

 $\frac{dN = 1 \text{ and } m_p + 1}{p + m_p + p_p + 1}$  So the constant property of the second consta

Naw particular the grati

$$\begin{split} dJ_{1} &= \frac{1}{2^{2}-1} \rho_{1} \\ &= -1^{2} - C^{2} - D^{2} , \ tr = -r + t_{1} - t_{2} , \quad - \dots \end{split}$$

Se complete solution is

 $^{7}$  Using into a smallest  $\langle q 0 \rangle = 1$  and  $\gamma (0) = 1$  for get

$$|b_i-b_j|=(|a_i|d_{B_i}-\rho_i)+\delta$$

$$z = \frac{1}{2} \sin z z_1 + \frac{1}{2}$$

$$b = \frac{3}{2} a^2 + \frac{1}{2} a - b = \frac{1}{2} (a^2 + a^2 + 2b)$$

Which is expetited the same solution as post only by Leo coalitation matrix  $\mathbf{k}$  ,

Notes Explicit its storm well to has asserted the smaller directly will assert them which electronically

## 7.4.6 Transforms of Integrals

$$\mathbb{P}^{(1)}(G_{i}) = \mathbb{P}^{(S_{i}), \, \mathbb{P}^{(S_{i})}}(G_{i}) + \int_{\mathbb{R}^{N}}^{S_{i}} f_{i} \mathcal{L}(G_{i}) \bigg\} + \frac{1}{2} \mathcal{L}(g_{i})$$

## 7.4.7 Multiplication By F.

$$\mathbb{P}\left(\mathcal{P}(\mathcal{E}) = \mathcal{E}(\mathcal{E}), \, \mathcal{P}(\mathcal{E}) \right) = \left( e^{\frac{2\pi i}{3} \mathcal{E}(\mathcal{E})}, \, e^{\frac{2\pi i}{3} \mathcal{E}(\mathcal$$

## 7.4.8 Division By (

If 
$$\ell(t|\theta) = \mathbb{P}_{\ell(t)}$$
 then  $-\epsilon \left[ \frac{1}{2} \ell(t) \right] := \int_0^\infty \ell(t) ds$ 

provide lije intagratievista.

#### Evaluation of Integrals by Laplace Transforms 7.5

#### Evample:

Ewinasi

Solution:

Inus taking limbales allo uliwe get

$$\frac{\frac{\pi}{6} \sin (c\pi)}{\frac{1}{6} - \frac{\pi}{6}} = \frac{\pi_{1}}{6} + \exp(c(c\pi) - \frac{\pi}{6}) [(a_{1} \times b)]$$

$$= \frac{1}{6} \left[ \frac{5 \operatorname{Tr}}{7} \right] = \frac{\pi_{1} - 2^{3}}{2^{3}} = 1 \operatorname{soft} (5 - \frac{\pi}{6} - 2)^{-1} a + 2^{3^{3}} - 5.$$

$$= \frac{1}{6} \left[ \frac{3^{3} \operatorname{Tr}}{7} \right] = \operatorname{reft} (5 - \frac{1}{6}) \left[ \log \operatorname{Hill} (6 \operatorname{proposite}) \right]$$

$$= \frac{1}{6} \left[ \frac{3^{3} \operatorname{Tr}}{7} \right] \left[ \frac{3^{3} \operatorname{Hill}}{7} \right] \left[ \frac{3^{3} \operatorname{Hill}}{7} \right] = \frac{1}{8} \operatorname{cont} (5 - \frac{1}{6})$$

#### Emmple

$$T_{\rm coll}(\rho) = \int\limits_{\Omega} 12 \, d \pi \, d \Sigma \, d \tau \, \cdot \frac{d \pi \, \Delta \tau (1)}{\Delta \tau (1)} \, \cdot \, \mathcal{M} \label{eq:total_coll}$$

#### Solution:

Single fungarior is described by the single-

$$= \frac{(\omega + 2 \int_{-1}^{\infty} (2 \log x)^{2} dx^{2} + \frac{8 \sin^{2} x}{dx^{2}} dx^{2})}{2 \pi^{2} \int_{0}^{\infty} (2\pi i \frac{8 \sin^{2} x}{2} + \frac{8$$

$$\begin{aligned} \text{(North): } & 2 \cos \beta \sin n x^{2} = 8 + (1 + 1) + \sin \beta x^{2} + \frac{72}{2} \\ & = \frac{9}{\pi} \left[ \int_{0}^{2\pi} \frac{3nx^{2}}{2} \sin \frac{3nx}{2} + \frac{12}{\pi} \frac{\sin 2\pi x}{2} + \frac{8}{\pi} \frac{1}{2} - \frac{8}{2} \frac{1}{2} - \frac{\pi}{2} \right] = 0 \end{aligned}$$

## 7.6 Inverse Transforms - Mathed of Partial Fractions

Having such that  $\phi_{0}$  are an derivation of the continuous of the continuous description is expressed in the continuous problem. We have seen that it can be a supported by the continuous continuous and expressed in oil that be not expressed as the continuous continuous and such that the continuous continuous and supported that the continuous continuous and subsequently and the continuous continuous continuous and supported that the continuous c

$$2 \cdot \left[ \frac{1}{n} \right] = 1$$

$$2 \cdot \left[ \frac{1}{n - \sigma} \right] = 2^{2n}$$

$$0, \quad v = \frac{1}{2^n} \left[ -\frac{\frac{2^{n+1}}{2^n}}{(n-1)^n} \cdot n = 0, \quad 0 \le n \right] \qquad \qquad 4 = -\frac{1}{2} \frac{1}{10^n} \cdot \frac{2^{n+1}}{2^n} \cdot \frac{2^{n+1}}{2^n} \cdot n^{n+1}$$

$$S_{i} = \frac{1}{2} \left( \frac{1}{\sqrt{1 + g^2}} \right) + \frac{1}{2} S_{i} (e^{ij})$$
 
$$S_{i} = \frac{1}{2} \left( \frac{g}{\sqrt{1 + g^2}} \right) + g S_{i} S_{i}^{2}$$

$$v = \sqrt{\frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right)^2 + \frac{1}{2} S(M) dr}$$
  $S = \sqrt{\frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right)^2 + \exp(i\pi gr)}$ 

$$g = c_1 - \frac{\tilde{g}_1}{2} \frac{a_1 e^{-c_2}}{c_1} \left[ -\frac{2}{2} a_2 \sin \alpha_2 \right] = 10 - \left[ \frac{(a + a)_1}{2} \frac{a_2}{c_2} \right] + 2 a_3 \sin \alpha_2$$

$$\frac{1}{10^2} \cdot \frac{1}{3} \frac{1}{10^2} \cdot \frac{3}{3} \frac{1}{7} = \frac{1}{20} (40007) \qquad \qquad 10 - \frac{1}{2} \left[ \frac{1}{10^2} \cdot \frac{3}{3} \frac{1}{10} \cdot \frac{1}{20^2} (40007) + 0.000105 \right]$$

All these results, leed to be mailly upon. The results if this figure, it case from the ricomes context upon the upon the properties of the results in the ricomben entire, it in the stand properties declared as a religious than the (initial and in the results).

**Note on Partial tractions:** It resolve a given it assumes to be tild, tractional well (a) asserts of the demonstration real traction. They will be out the first and will also and some traction provided why the whom algebra such a place in the contraction will be a sum of an italiance in some displacement as

- . It is not with  $\pm 1$  mean factor c . Although length rather the expected of particular factor of the factor  $40 \times 10^{12}$
- $2-m_{\rm S}$  is greated to each appoint  $s+s_{\rm S}$  in the definition was as made who summing each fractions of the

$$M = \frac{2\pi}{2 - 2} \ln \frac{\frac{2\pi}{2 - 2} \pi}{2 - 2} = \frac{2\pi}{15 - 24} \pi \ln \ln \frac{\frac{2\pi}{2}}{2 - 2\pi}.$$

(0,1] is the ground and transmission (with  ${f ac}$  ) (0,1] is deforming the responding write faction of (+)

$$^{1}P^{\prime}d = \frac{\sqrt{2}}{\sqrt{1+p^{\prime}}} \stackrel{\Phi}{\longrightarrow}$$

 $4-\infty$  has each of order p wolls  $2p^2+2p-2p^2$  . Figure combinations gives conduct the sign of rigadian

$$|W_{2}(0)| \leq c_{1} |W_{2}(0)| + \frac{|Z_{1}|g_{1}|}{|Z_{1}|} + \frac{|Z_{2}|g_{2}|}{|Z_{1}|} + \frac{|Z_{2}|g_{2}|}{|Z_{2}|} + \frac{|Z_{2}|g_{2}|}{|Z_{2}|$$

The Let forebound in the description of section  $A \in \mathcal{B}$  less

For the cases construction (by the domestic structure) is a label of a fractional as governor with the convergence of the part of the part of the property of the convergence of the property of the structure of the property 
#### $9.7 \pm 9.63$ Grey-Function.

And way the corps with as to of a conjugate which lifts a vector based a  $\pi$ ggo et les secondes à la monorque de la le portoco la procesió a como sub as a  $m_{\rm p}$  and integrated with a small step to with a constitutive scalar function ( ).

$$\mathbf{p}_{\mathbf{k}} \mathbf{T} = \mathbf{g}_{\mathbf{k}} \mathbf{1} \mathbf{d}_{\mathbf{k}} \mathbf{1} \mathbf{d}_{\mathbf{k}} $

$$f(-x) = \frac{f(\ln x) < x}{[-10.0] < x}$$

others all palmy special policy.



## 7.7.1 Transform of Duit Function

$$\begin{split} \mathbf{u}_{i}(\mathbf{x}(t)\cdot\mathbf{s}) &:= \int_{0}^{\pi}\mathbf{s}^{-2}\mathbf{u}(t-s)\boldsymbol{\pi} \\ &= \left[\frac{\mathbf{s}}{2}(e^{\mathbf{s}^{2}-t})\cdot\mathbf{t}(t+\int_{0}^{\pi}\mathbf{s}^{-2}+1)\mathbf{t}^{\frac{1}{2}}\right] = \left[\mathbf{v} + \frac{1}{2}\mathbf{s}^{-2}\right], \end{split}$$

$$\exists a : a = a = a^{-\alpha}$$

$$\begin{aligned} \Pi_{AB} & \qquad \qquad \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Theta^{BB} \\ \Pi_{BB} & = \operatorname{adder} & \qquad \Pi_{BB} & = \Pi_{BB} & = \Pi_{BB} \\ \Pi_{BB} & = \Pi_{BB} & = \Pi_{BB$$

The first for  $(g_1,g_2) = g_1 + g_2$  containing the  $g_2$  -  $g_1$  gold first  $g_2$  and  $g_3$  denotes the invariant  $g_2$  in  $g_3$ sociali i eminati

#### Second Shifting Property 7.6

$$- \log n_{\rm B} = - 2 (\sigma_{\rm B}/1555)$$

$$\mathcal{A}_{i}^{0}(t+\delta) \times S_{i}(t+\delta)^{0} = \frac{1+\delta \delta \mathcal{A}_{i}^{0}}{2} \mathcal{I}_{i}$$

Proof.

$$\begin{split} f_{+}(\theta) &= G((p,q,0)) - \chi_{+}^{(p)} = -\int_{-p}^{\infty} g^{-p^{2}} h^{(p)} - 2(q,0) - g(2h) \\ &= -\frac{1}{6} (f^{(p)}(h_{+} - g(q,0)) + f_{+}^{(p)} f^{-p^{2}} h(f) - g(q,0) \\ &= -\int_{-p}^{\infty} g^{-p^{2}} h^{(p)} f^{(p)} f$$

#### Unit Impulse Function 7.9

The right of  $g(\phi_0)$  , let grate be about the visit of non-time is all imposes. with inner the consists. To post value of a life mich describe a frequently milmouse (proprietation upon laterantice).

This into mode the contribute day has to initiative infinitesim (Fig. 6).

$$h_{\mu}^{(1)}(-n) = h_{\mu}^{(1)} \qquad \text{ of } x^{(1)}(-n)$$

$$= n \qquad \text{ otherwise}$$

which follows the constant of the set x = 0, the following of the set of chess and a poly and the wild the set of the oxidey was in buch a toyy fix the fired to an eye in the

(Fig. ) by  $(\gamma)$  is a non-section of  $\mathcal{E}(\gamma)$  . We also near we define a

$$S(t-t) = \cdots$$

green 
$$\int_{-\infty}^{\infty} dt dt = 1$$
 (6.30)

i.9.

As an Hierarch, a twistog astrophisms out two analy beam may be considered as the i -i.i. og assemb rufour leach g /yeperur i engüreva heg uuph cirre dee niboleach o likksi dis − ale e Tilius

$$\begin{aligned} \mathbf{d}(t) &= V_0^{-1} \\ &= \mathbf{J} \\ &= W_0^{-1}(t) + S \end{aligned} \qquad \begin{aligned} &\text{Homogerical} \end{aligned}$$

## 7.9.1 Transform of Unit Impulse Sunction

II (4 be a fine or or other lingues of the tilling).

$$\prod_{i=1}^{n} \theta(i) \mathbb{E}_{q}(0) - \theta(i) \theta(i) = \prod_{j=1}^{n-1} \mathbb{E}_{q}(j) \cdot \frac{1}{n} \theta(j) + (\Delta + \kappa - \kappa) \theta(j) \cdot \frac{1}{n} = \theta(i) \cdot \frac{1}{n} + \theta(i) \cdot \frac{1}{n} = \theta(i) \cdot \frac{1}{n} + \frac{1}{n} \theta(i) \cdot \frac{1}{n} = 0$$

ow Meaning up than a retor intograph

$$A(x) = 0 \text{ for } g(t) = f(t) = g(t) = -f(t)$$

In contrallation of the end of the integral

$$= 0 \text{ flats.} \qquad \qquad \int_{-\infty}^{\infty} e^{-i\theta} |\hat{\phi}(t) - \phi(t)| = |\phi(t)|^2$$

Noted HS shooting tail glain ing

## 7.10 Periodic functions

If all is a new confunction with coded T (i.e.  $S_{T} = 0 + 3.9$  )then

$$I\{\mathcal{E}_{ij}\} = \frac{\int_{-1}^{T} e^{-i t^{2} H_{ij}^{\alpha}(t)}}{1 + e^{i t^{2}}}.$$

Frample

#### Salusian:

Leo subitor s'uni el perior i denegan

$$\begin{split} H^{AA} &= \frac{1}{1 - e^{-2x}} \int_{0}^{\infty} e^{-2x} \, d(t) dt - \frac{1}{1 - e^{-x}} \int_{0}^{\infty} e^{-2x} \, d(t) dt \\ &= \frac{1}{1 - e^{-2x}} \int_{0}^{\infty} \frac{e^{-2x}}{1 - e^{-2x}} (-e^{-2x}) \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \left[ -1/2 \, e^{-2x} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2x}} \left[ e^{-2x} \, \frac{e^{-2x}}{1 - e^{-2x}} \right]_{0}^{\infty} \\ &= \frac{1}{1 - e^{-2$$

## 7.11 Fourier Transform

=Nutringeries is an explosimation process with a warry general given build or access a light unable option-see மு active from which by to after all user do. In (like situation on a your minimum extense) when

That greats period by the series represents the signal in the entry of the  $(-\infty)$  to the time series Contragonard zed for early to signals any

**Definition** Autouse (i.e. a placety select the interper delegation and the worlds), then these a Pick of condereconstruction.

$$\hat{Q}^{\mu}(t) = -\frac{2\pi}{3} + \frac{1}{2} \sum_{i=1}^{M} \int_{\mathbb{R}^{N}} \sigma_{ij}(t) \, dt \, \frac{\partial \mathbb{D}(t)}{L} + \mathcal{O}_{ij}(t) \frac{\partial \mathcal{M}(t)}{L} \, \Big]$$

While although the mappe and Likewier grant by the  $^{\rm th}$  restRuinter from the 8

$$\label{eq:epsilon} |\varphi_n| = \frac{1}{n} \sum_{i=1}^n \mu_i \Delta \exp(\frac{\pi i \sigma}{i}) \, \mathrm{d} m_i - n = 2, \ 1, \ 2, \ 9.$$

$$\chi_{n} = -\frac{1}{L} \int_{\mathbb{R}^{n}} \eta_{n}(s) \gamma^{rmn}_{n-1} g(s) \quad \forall s = 1, 2, 2, \dots \, , \label{eq:constraint}$$

## 7.12 Drichlist's Conditions

The sufficient condition for the converged certific Hour or series an inclined Lipid Liefs conditions:

- $\eta = \eta/4$  is behody, six junyahed and in i.e.
- $x = y_{\rm eff}^2 (y_{\rm eff})$  a form in subscript  $(x_{\rm eff}) = x_{\rm eff}^2 (y_{\rm eff})$  . Any since providing
- $g_{\rm c} = g_{\rm c} g_{\rm color} g_{\rm col}$  . In the manufactor in the Administration of the  $g_{\rm color}$

## 7.12.1 Fourier Cosmo and Sine Series

Bit sizareven de fod drung er vilke fod 52, then ille Bruder conserver to na chiy colòne that de golechigh The pompanutering is mat brid in all siza colos nelser in Than bit is Tour er ser cars of the form

$$f(x) \; = \; \frac{dy}{2} + \sum_{i=1}^{N} d_{i,i} \times \kappa \frac{\delta d_{i,i}}{d_{i,i}}$$

 $\|g_{-}(y_{i})\| \le \text{profiles}(y_{i} \ge a) + a 610 \text{ MHz}(0.05)$ 

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

$$c_{n} = \frac{2}{2} \int_{0}^{L} G(\mathbf{r}) \cos \frac{2\pi T}{L} d\mathbf{r}$$

 $\rho_{c}=0,$   $\rho_{c}=0.$  The flat burse selections represent the first partial surface and compare only a notice that the position of the selection of the select

$$\widetilde{\rho}(z) = -\sum_{n=1}^{\infty} b_n \, \sqrt[n]{n} \frac{\pi z}{n}$$

 $_{\rm P}$  From km data  $^{10}{\rm GeV}$  is not determined  $H_{\rm P}$ 

$$\mathbf{c} = \mathbf{C}_{1}^{-1}, \ \lambda, \ \lambda$$

$$E_{\mu} = \frac{2}{4} \int_{0}^{\pi} dx |\mathbf{S}| \mathbf{E} \frac{d\mathbf{E} \mathbf{x}}{L} dx, \qquad \qquad \forall k \in [1, 1, 2], \mathbf{S}, \dots$$

#### Example:

supplies the conformal in  $v = 2 \times v \times 2, \ \partial v + d ) = f(v)$ 

#### Solution:

First now that Trivials 4, and by the d

Denote standing is appraisable.

$$s_{ij} = \frac{1}{2} \left[ \frac{1}{2} \partial_{\mu_i} c \sigma^{-1} \frac{\partial u_{\mu}}{\partial t} dv + \frac{1}{2} \frac{\delta}{1} \right], \ \sigma v = \frac{v^{-\frac{2}{3}}}{2} \frac{v}{\eta} \left[ v + v_{j+1} \right]$$

The restrictive expected a self-years, for  $n=0 \ge 3$  , n=3 ,

$$\begin{split} & \hat{A}_{1} = \int_{0}^{\infty} \int_{0}^{\infty} f(r) dr + \frac{\partial x^{2}}{\partial r} dr + \frac{1}{2} \int_{0}^{\infty} dr_{1} dr \frac{\partial x^{2}}{\partial r} dr \\ & + \left[ \frac{1}{2} \int_{0}^{\infty} dr \frac{\partial x^{2}}{\partial r} \right]_{0}^{\infty} - \frac{1}{2} \int_{0}^{\infty} dr \frac{\partial x^{2}}{\partial r} dr \\ & + \left[ \frac{1}{2} \int_{0}^{\infty} dr \frac{\partial x^{2}}{\partial r} + \frac{\partial x^{2}}{\partial r} \right]_{0}^{\infty} - \frac{1}{2} \int_{0}^{\infty} dr \frac{\partial x^{2}}{\partial r} dr \frac{\partial x^{2}}{\partial r} + \frac{\partial x^{2}}{\partial r} \left[ \frac{\partial x^{2}}{\partial r} + \frac{\partial x^{2}}{\partial r} \right]_{0}^{\infty} - \frac{\partial x^{2}}{\partial r} \left[ \frac{\partial x^{2}}{\partial r} + \frac{\partial x^{2}}{\partial r} + \frac{\partial x^{2}}{\partial r} \right]_{0}^{\infty} - \frac{\partial x^{2}}{\partial r} \left[ \frac{\partial x^{2}}{\partial r} + \frac{\partial x^{2}}{\partial r}$$

Tends, the state in zero cost at section of the probability of  $\pi_i$  is the equation section  $\pi_i$  of the cost of  $\pi_i$  is the first of  $\pi_i$  in  $\pi_i$  in

The sind subflocialist factor 1,2,3,... such

$$\begin{aligned} & \psi_{0} = \frac{1}{L} \int_{0}^{L} f(x) \, dx^{2} \frac{dx}{dx^{2}} dx + \frac{\pi^{2} k}{2 \sqrt{3}} x \, dx \, \frac{G_{0} \pi}{2} dy \\ & = \left[ \frac{1}{2} \left( \frac{2 \pi}{2 \pi} \cos \frac{\pi x}{2} \right) \right]_{0}^{2} + \frac{2}{2 \pi^{2}} \int_{0}^{L} dx \, dx \, \frac{G_{0} \pi}{2} dy \\ & + \frac{1}{2} \left( \frac{2 \pi}{2 \pi} \cos \frac{\pi x}{2} + \frac{\pi}{2} \frac{1}{2 \pi^{2}} \sin \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{2 \pi}{2 \pi} \cos \frac{\pi x}{2} + \frac{\pi}{2} \frac{1}{2 \pi^{2}} \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{\pi}{2} \left( \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} + \cos \frac{\pi x}{2} \right) \\ & = \frac{1}{2} \left( \frac{4}{2 \pi} \cos \frac{\pi x}{2} \right)$$

Tiermore,

. Indic Fourier codes for  $(\chi_1 + \chi_1)$  ,  $\chi_2 \in 4$ , for x = 1 and those in Lieu different light for contacting to the contacting of th

Salution:

$$\begin{aligned} \mathbf{q} &= \frac{1}{2} \int_{0}^{1} \mathbf{g} \, d\mathbf{r} + \frac{1}{2} \int_{0}^{1} \mathbf{g$$

**Comment** that because a Find in tende could have infinitely maily girle-coronal net (40 not tream left had a casy. I not that many tends in the period of time on dicardice each cased by for elly many teams nor had y learned to a Fix in criponos, the challespects on pro-distribution but are also addicted a sense of a symmetrial tender of a better that the polynomial tenders of a symmetrial tenders as it is to be polynomial to all which are sufficiently many cowers (4 a).

Exemple: This turned series (a.e. on 25) restricted (III)  $I_{(0,1)=0} = s \cos(4s) + s \sin(2s) \cos(s \sin s) + s = s \cos(4s) + s^2 \sin(2s).$ 

**Example:** The House, see expressed 2streamers (ling that a begoing a ring is not exactly realised as q = 0 and the q = 0 and the proof of the set of the first object of the set of t

. Since a substituting frequency described as C(x) = 0 - in  $C^{\infty}(x)$ 

### 7,12,2 The Cosine and Sine Scries Extensions

There are the exist continuous be that densed a thick moved  $S(x)^*$  from respect to an even the construction, if  $S(x)^*$  and be extended at the corollar continuous Similary from be extended to be one of periods function of partial Y from be extended as the corollar periods function of partial Y and expression S(x) and 
#### guen (costre sortes) extension of fix.)

 $\mathfrak{F}_{W^{s,j}}(\{v\})$  , with reflect [0,L] , is least decension of j —Cod  ${}^{s_{k_k}}(k_k)$ 

$$\begin{aligned} \mathbf{e}_{[x]} &= \frac{(\mathbf{e}_{[x]}) - (\mathbf{e}_{[x]} + \mathbf{e}_{[x]})}{(t_{[x]}) - (t_{[x]} + \mathbf{e}_{[x]})} & G(x + 2x) (\mathbf{e}_{[x]}), \\ \\ \mathbf{e}_{[x]} &= \frac{2\pi}{4} + \sum_{i = 1}^{n} \mathbf{g}_{i} \cos \frac{(\mathbf{e}_{i}, \mathbf{e}_{i})}{2}, \qquad \text{subtribes} \\ \\ \mathbf{g}_{i} &= \frac{2\pi}{4} \prod_{i = 1}^{n} \operatorname{fix}(\cos \frac{(\mathbf{e}_{i}, \mathbf{e}_{i})}{2}, \mathbf{e}_{i}) & i = 0, 1, 3, \\ \\ \mathbf{g}_{i} &= \mathbf{g}_{i}, \qquad i = 1, 2, 2, 4, \end{aligned}$$

## Odd (Sine series) extension of $f(t_k)$

Over f(x) takes for  $[0,\infty]$  is dedictorable of particles i .

$$F(x) = \begin{cases} f(x) & \text{for } x \neq \underline{0}, \\ 0, & \text{for } x = 0, 1, \\ -f(-x), & \text{for } x \neq 0. \end{cases} \quad F(x) \cdot \underline{2f}(-f(\underline{2}))$$

**'81** 000

$$\begin{split} f(x) &= \sum_{n=1}^{\infty} \alpha_n \cos \frac{\partial n x}{\Delta} &= \operatorname{supp} \log x \\ -a_n &= 0 & n = 0, 1, 2, 2, \\ -2x &= \sum_{i=0}^{\infty} b(x) \sin \frac{\partial n x}{i} \partial x_i &= b = 0, 1, 1, \end{split}$$

#### Etumples

 $A_{ij}(qx) = x_{ij}(0,x) e^{-ix_{ij}}$  ) and its destribution since variety definitions of period  $e_{ij}$ 

#### Solution:

Commission

$$l(z) = 1 \cdot \frac{2}{\pi^2} \sum_{i=1}^{12} \frac{1}{i2z^2 + ij} \cos \frac{(2z - ij)z}{2} z$$

Marchaelles

$$f(x) = \frac{1}{\pi} \frac{\frac{1}{\sqrt{2}} \left(-\frac{1}{2} \sum_{i \in \mathcal{I}} g_{i,i} \right)^{\frac{1}{2} - \frac{1}{2}}}{\pi} g_{i,i} \frac{1}{\sqrt{2}} \frac{1}{2}$$

# Previous GATE and ESE Questions

ng digitakan ng paplago inangton ini sili notion. ија п (абуми be ogual и с

$$(g) = \frac{g}{g^2 + g^2}$$
 (ii)  $\frac{g}{g^2 + g^2}$ 

$$\langle g \rangle = \frac{\sigma}{\sigma + \sigma^2} \qquad \qquad \langle d h \rangle_{\sigma^2 = \sigma^2} \frac{\sigma}{\sigma^2}$$

ISE, SATE-2003, P. NARKAL

றுது Legilar சி arctarta of එம் பெரிச்ச சிறால் ச

$$\ll -\frac{8}{1}$$

$$10. \frac{z}{z - \omega} = 0.0 \Rightarrow \frac{y}{\omega}$$

[ME, BA16 2000, 2 marks].

കൂള പുരുപ്പെട്ടാലെ വാടിക്ക് Linction is delicied is &

$$|x|^{2}=c_{i}^{2}+\frac{10(\cot^{-1}|c|a|)}{\left[1,\frac{1}{2}(1+c)^{2}a\right]}\text{ like Legence and consists}$$

$$(\underline{\phi}) > e^{-i\phi} \qquad \qquad (\underline{b}) \cdot \frac{\underline{\phi}^{-i\phi'}}{a}$$

$$|B|/\frac{e^{-\alpha'}}{c'}$$

$$|a\rangle = \frac{a^{ss}}{a}, \qquad (1) = \frac{e^{ss}}{a}.$$

[MJ, GATE-2004, 7 minks).

gy A solution for the Cilineality couplier.  $\chi(t) + 2 \epsilon(t) + 3 \epsilon \eta \approx 1 \gamma \sin (\alpha t) \cos (\alpha t) + \epsilon(0.01 \pm 0.5)$ 

- ie) e<sup>lo</sup> 50).
- 6. 4 . 10
- $-100 \pm 1000$

FDC (SATE-2006, Limark)

 $\mathbb{Q}[\mathfrak{S}]$  is the Laplyty bank first controlled  $\mathbb{S}[\mathfrak{h}]$ 

if and optable hars/or  $\mathbb{R}^2 \left[ \mathbb{Q}(\partial \mathbb{R}^3) \right]$ 

- (a) = r(b)
- $= \{51 \frac{1}{9} L(5) 100\}$
- $(a_i^*, a_i^*)(a_i^*, a_i^*)$
- $-(s)^{-1}G(s)$  as

[MF, GATE 2007, 2 insuk8],

 $2.6 \quad \text{Modelle} \left\{ \frac{\vec{s}}{2} \right\}^{\text{H}} \vec{\phi}$ 

- iui r
- 0.

DE, SA 10-2007, 2 marks).

 $\Omega(\mathcal{T})$  . Explains the relation for the fluid for f(z) = 0.0571 GeV.

- 8) <u>3</u>

(d)  $\frac{d}{d^2 + d^2}$  (E) (d)  $\frac{d}{d^2 + d^2}$  (SE, 3A) E-2009-2 marks

0.8 The time  $s_{2} \sim 1000 \, \text{Targeth (c)} \, \frac{1}{(s_{1} - s_{2})} \, ^{1} \text{S}.$ 

- (a) 1 (a)

IME, GATT-2009 1 mark).

Old The Lapha an entropy of a function 5(6) a

- $\frac{1}{s^2(s,t)}:= \operatorname{Teal}(\operatorname{unction} s(t))s$
- india (india)
- $\begin{array}{cccc} \langle \delta \rangle (T) & = C^{(1)} \\ \langle \delta \rangle & = c^{(1)} & = c^{(2)} \end{array}$

IME, GATE-2010, 2 marks]

 $0.141 \otimes \mathrm{vor} + \frac{2\pi 4}{12^2 + 4\pi^2 \sin (K + 2\pi)} \frac{1}{12^2 + 4\pi^2 \sin (K +$ 

Upper , is value of  $\frac{1}{2}$  of

[ED], GATE-2010, 2 morks]

Common Bata Guestians 11 and 12  $\mathcal{G}(\log p_1) (f_1 \otimes p_2) (g_2) (g_3)$  so soown below

656



gette

Q.11  $g \in \operatorname{San}$  on  $\operatorname{Can} \operatorname{A-sep} \{ g g \}$ 

$$(21/(31)) - (21-3) = -(21/(3)) = 7 \frac{1}{12} - 5$$

$$\varphi_{t}^{(i)}(p(t)+r\left(N-\frac{2}{2}\right)-(2t)\varphi_{t}(t)+t\left(1-\frac{2}{2}\right)$$

 ${\sf G}_{i}$  (2). If i , i

$$\mathbf{u} \colon \int_{0}^{1} \left( \mathbf{v}^{2} - \mathbf{v}^{-1} \right)$$

$$(a) = \frac{1}{2} \left( e^{-\frac{1}{2} a} - e^{-\frac{1}{2}} \right) \qquad \quad \text{(b)} \quad \frac{1}{2} \left( e^{-\frac{1}{2} a} - e^{-\frac{1}{2} a} \right)$$

$$\tan \frac{\partial^{2n}}{n} (1 - e^{2n}) = \tan (\frac{1}{n} (e^{n} - e^{2n}))$$

$$c(-\frac{1}{2}(e^r-e^{2r}))$$

,FF, CATC-2015, 2 mail:k-j1

0.43% to a verse had the harmony of the function

$$h(x) = \frac{1}{a(x-y)} (-1) g_{x}(x,y,y,y)$$

$$|\langle g \rangle| \Delta r \rangle = |\langle g \rangle|$$

MF GATL 20 2.2 marks

Q.14 Consider the affiliate (i.e. occasion

$$\frac{\phi^2 A(t)}{\phi^{(2)}} \leq 2 \frac{\phi'(t)}{\phi} + p(t) - 5 p(t) = 0.7$$

$$\mathcal{D}^{(r)} = -2 \cos \frac{\alpha r}{\alpha t_{\rm min}} = 10$$

The interpolation of  $\frac{d\theta}{d\theta} = 0$ 

JEB, IN OATE-2012, 2 mail ks]

**Q.15** The first first  $\hat{\eta}_{ij}$  constant the different at assisting

$$\frac{e^{2s}}{e^{s}} = 0 = 0 \text{ and the asserts } y \in \operatorname{subjects}(\pi(t) = 0)$$

 $\frac{df}{dt}$  (22) = 4. If the expression and figure t is the t

$$3. \quad \frac{2}{2}$$

ME, GA/E-2013, 2 Marks)

Quital at place the refugility of conjugate  $\frac{s}{s^2+s^2}$  . The

aplace has 6 miles if populating

$$(5) \ \frac{2 - 2}{(n + 3)^2 + 1.5} \ (5) \ \frac{8 + 2}{(n + 3)^2 + 1.5}$$

$$M = \frac{s - 2}{(s + 2)^2 + 15} \qquad \quad (3) = \frac{s - 2}{(s + 2)^2 + 25}$$

$$(31) \frac{8-2}{18+3}$$

[MI, GATE 2014 to Mask)

 $Q_{\rm eff} (t) \ln t \, \phi(t) = \frac{\cos t \, \omega}{c_{\rm eff} + 1.0 \, \omega + 10} \, \log (nt) \, \sin n \, \omega \, \, \mathrm{TeV}_{\rm eff} (\omega) \, \mathrm{Te$ 

 $\begin{array}{lll} \text{village} & \text{otherwise} \\ \text{180 O} & \text{otherwise} \\ \text{200 S} & \text{otherwise} \end{array}$ 

 $\Omega$  10 such that with  $m{e}_{\Sigma} g(y_0 + y_0^{**}) = 1$  , the subject

$$x=-10 \text{densit, } p) \text{ equation } \frac{e^{2k}p}{p+k} = e^{2k}p \prod \Delta_k = p$$

FC, CATL 2014 . 2 Markst

 $\mathbb{Q}/19$  . On the case that obtains the  $\mathcal{Q}(\mathcal{A})$  and  $\mathcal{Q}(\mathcal{A})$  and  $\mathcal{Q}(\mathcal{A})$ 

$$(a^2, \frac{5 - 5a}{a^2 + 3a})$$

$$(c) = \begin{cases} c = 50 \\ c = 20 \end{cases}$$

Q.20 The last standard of the function  $\eta_{\rm c}^{\rm e}$  is quality

$$I(\mathcal{A}) = \mathbb{E}[f(t)] + \int_{\mathbb{R}^{N}} f(t) e^{-tt} dt$$
, Lacttee transform to

Indition or glown below to alven tw 11.11

$$(4) = \frac{a^{-1/4}}{a} \qquad (5) \frac{1}{-2} e^{-4}$$

$$|Y|^{2} = \frac{2s^{-s}}{s} \qquad (6)^{-1} = \frac{2s^{-s}}{s}$$

 $\mathbb{Q}/\mathbb{M}$  is the scalar subscalar field of the distance of Sangley of Tile is delicated

$$\phi \in \left[ \left( \left( e^{2^{2}} \right) \right) \phi \right]$$

$$\hat{g} \in \int_{\Omega} e^{i\omega t} \hat{g}(t) dt \qquad \qquad \hat{g}(t) \int_{\Omega} e^{i\omega t} \hat{g}(t) dt$$

$$(y) \stackrel{G}{\sim} e^{-i\phi}(y) \phi'$$

(ME, 8016 : 1 MarM)

 $Q_{i,k,k}(0)$  which had notes the  $Z_i^{(k)}$  belone i $(\pm 1.0)$  . Follows:  $(\pm 0.05)$  with the  $(\pm 0.05)$   $\times$ IMF, 2016 . 2 Varks I

U.82 Layer  $\epsilon \mapsto \epsilon (\epsilon n) \cos \epsilon (n) \delta$ .

$$\hat{\theta} := \frac{8}{s^2 + m^2} \qquad \qquad \hat{\beta} \cdot \frac{\theta}{s^2 + n^2}$$

$$y_i^{(i)} = \frac{\alpha}{\sqrt{1 - \alpha^2}}$$

$$\lim_{n \to \infty} \frac{2^n}{n! + n!} = \lim_{n \to \infty} \frac{n}{n!}$$

IME, 2016 - I Marki

G.24 Solutions of Englace education had appearance is gaser deep light series duri valteus are da kell

- Application of paragraph
- (a) roman altinotions
- (ar conjugate framily is fixed and
- des order ferrotioner

[ME 2016 : 1 Merk]

 $\mathbb{Q}[25] \square \in \mathbb{R}^{n \times n \times n \times n}$  transformed  $\mathbb{C}_{\ell} = \mathbb{R}^{n \times n}$  of  $\mathbb{C}_{\ell} \in \mathbb{R}^{n \times n}$ 

$$\lim_{n \to \infty} \frac{1}{n! + 4n + 2n} = \lim_{n \to \infty} \frac{1}{n!} \frac{1}{n!} \frac{1}{n!}$$

$$\sin \frac{\pi^{-2}}{4^2} \frac{\pi^{-2}}{4^2} \frac{\pi^{-2}}{2^2} = -10 \frac{6}{8 - 6}$$

Singularized equation  $-\frac{3g_{2}^{2}}{a} + \frac{1}{2}g_{2}^{2} + 3r_{1}^{2}$  (1). The

> reacons of the cyclomic t eliminating  $t \in \mathbb{R}^{n-2}$  $\chi(\phi) = g(\phi) \chi(\phi)$  genutes the collision binarion  $\phi$

, and the 
$$\mathcal{E}^{\mathrm{AA}}(\mathcal{A})^{\mathrm{T}}$$

$$0.5 \le 0.00 \le 0.00$$

$$(d(|z|4|e^{-z/4}, d_0) + (4/6)^{1/4})(d_0)$$

[FF 2016 : : Mark]

Q.27 The Elementary control of the United

$$f(\mathbf{v}) = 0, \qquad \dots < n \le 0.$$

$$-a_{\rm color} = 0$$
 where

$$f(x) = \frac{\pi}{4} + \frac{2}{\pi} \left[ \frac{2 \sin x - 6.073 \pi}{1} + 1 \right]$$

$$\lim_{j\to\infty}\frac{a_{j}(p)}{n}+\frac{a_{j}(p)a_{j}(p)}{2}+\frac{a_{j}(p)a_{j}(p)}{2}+$$

the paragraph persists after a fourtries at

$$z_0 = U(g) \cdot e \varepsilon$$

$$q_0 = \sum_{i=1}^{n} \frac{1}{n_i} = \frac{n_i^2}{n_i}$$

$$(x) = \sum_{n=0}^{\infty} (1 + \frac{n^2}{n}) = (x) = \sum_{n=0}^{\infty} (1 + \frac{n^2}{n}) = \frac{n^2}{2}$$

$$\left( g_{1} \left( \frac{\sum_{i=1}^{n} \left( 2 n + \eta_{1}^{-1} + \frac{n^{2}}{3} - \eta_{1} \right) \right) \left( \sum_{i=1}^{n} \frac{1 - \eta^{n+1}}{2 n} + \frac{n}{4} \right) \right)$$

,CE, 2010 : 1 Mark)

G.28. He Laplace transfer Vol. 5: 5

(4) 
$$\frac{s}{(s * i)}$$

ME, SATE 2017 I MANN

OLPA Entitle hard on

$$\label{eq:definition} \sigma_{i,j}(x) = i \cdot \frac{2}{2} \cdot \frac{-\pi \cos x + 3}{2}$$

hovatoo  $u_{ij}$ n ) eFn.4 $\gamma$  seres opga soor l

- $\hat{H}_{2}\hat{H} = 0$
- :ii \_
- ::: 9
- 13: 3

[PSF Protes 2017]

Answers Transforms

- 2 11 T I. de-
- $g_{i,j} = \langle x_i \rangle \qquad g_{i,j} = \langle g_{i,j} \rangle \qquad g_{i,j}$

- $(a) = \{a_1, \dots, a_n\} = \{a_1,$ 8.

20 (6

- ነላ. ነው 29 71

- (6, -9) (6. (2)24 (3)
  - 2L 56
- 17. Jul 28. 131
- 19. (b) 27. 101
- 26, 46 29, 30

51 (2)

### EXPLANATIONS Transforms

2. <u></u>Ъ;

$$E(SITM) = \frac{d}{d^2 \ln n^2}$$

Э. (6)

$$\begin{aligned} ||||f(t) - g|| &= \int_0^t e^{-tt} ||f(t) - g|| dt \\ &= \int_0^t e^{-tt} \cdot \ln |e^{tt} - \int_0^t e^{-tt} \cdot |f(t)| \\ &= 0 + \int_0^t e^{-tt} dt = \left[ \frac{e^{-tt}}{2} \right]_{tt}^{tt} = \frac{e^{-tt}}{3} \end{aligned}$$

4

$$u(t) = 2v(t) = u(t)$$

Taking uli on com ones:

$$|S(s)-v(t)|+2N(s)-$$

$$\lambda(s)(s+2)=1$$

$$\forall x : = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

$$(\mu, r') = (\gamma \wedge \gamma) \gamma' r'$$

$$\left(\left| \int_{0}^{T_{1}} \left| -\frac{1}{s} \, ds \, ds \right|^{2} \right| = \frac{1}{s^{2}} \, F(s)$$

In the problem as

$$\delta v = - \left| \int_{0}^{t} \theta \mathbf{x}(\mathbf{x}) \right| = \frac{1}{s} F(\mathbf{x})$$

ă.

Жлос.

$$f(s) \cdot m_0^2 = \frac{m}{(s^2 + \sigma^2)} = f(s), solit.$$

$$\begin{split} \mathcal{L}_{\mathcal{A}}\left(\frac{\mathbf{S}^{2}}{2}\right)^{\frac{1}{2}} &= \int_{0}^{\infty} f(\mathbf{S}) \, d\mathbf{S}^{2} = \int_{0}^{\infty} \frac{\partial \mathbf{S}^{2}}{\mathbf{S}^{2} + \partial^{2}} \\ &+ \left[ \mathbf{S} \cdot \mathbf{Y}^{2} \right]^{\frac{1}{2}} \\ &+ \left[ \mathbf{S} \cdot \mathbf{Y}^{2} \right]^{\frac{1}{2}} \end{split}$$

ortu Osigraan

$$\int e^{iQ} \frac{\sin Q}{l} dl = \frac{\pi}{2} \cdot \tanh \frac{g}{m}$$

$$\log n \left( \frac{D}{n-1} \operatorname{self} \left( \frac{n}{n} \right) \right) = 0 \text{ for } n \in \mathbb{N} \text{ or } n \in \mathbb{N}$$

$$\int \frac{8 \ln n d}{2} \, \Theta' \, = \, \frac{n}{2} \, \left[ f(m) \times f(m) - \frac{n}{2} \right] \, f(m) \times C, \label{eq:energy_energy}$$

n in 6 a 36He i w = Tetronio svojna ali redije

anamori: 
$$\frac{\epsilon}{2}$$

ll spislanta degljugi

$$^{2}\left( \cos^{2}\left( 2n+\frac{\pi }{2}\right) \frac{\pi }{2}\right)$$

U. 143

$$1 \left( \frac{1}{\sqrt{x^2 + y^2}} \right)^2 = 2$$

$$\frac{1}{\sqrt{x^2 + y^2}} = \frac{1}{\sqrt{x^2 + y^2}} = \frac{1}{\sqrt{x^2 + y^2}} = \frac{1}{\sqrt{x^2 + y^2}}$$

$$\frac{1}{\sqrt{x^2 + y^2}} = \frac{1}{\sqrt{x^2 + y$$

$$L = \frac{1 - 1}{1 + 2} \frac{1 - 2}{1 + 3} = L = \frac{1 + 2}{1 + 3} = L^{\frac{1}{2}} \frac{1 - 2}{1 + 3}$$

3ler dard (ormuta:

$$\left|\left(-\frac{1}{2}\right)\right| = 1$$

$$f^{-1}\left[\frac{1}{x+1}\right] = 5^{-1}$$

$$f_{ij} \left( \frac{1}{2} , \frac{1}{2} , \frac{1}{2} \right) = 2a$$

$$d(t) = \frac{1}{s} \frac{1}{(s+t)}$$

$$\frac{d(t)}{s} = \frac{d}{s} - \frac{d}{s} = \frac{d}{s^2} - \frac{d}{s + 1}$$

$$= \frac{d A(t)}{s} \cdot \frac{1}{(s+t)} + \frac{O(st)}{s^2(s+t)}$$

$$= \frac{d A(t)}{s^2(s+t)} \cdot \frac{1}{s^2(s+t)}$$
Melont is confident of  $s^2 = s$  and constant in

$$S + T = 0 \qquad \dots \text{ in } T$$

$$3a_{n} = -30 + (\frac{n-1}{2}) \left[ \frac{1}{2^{n}} + \frac{1}{2^{n}} \right] = -1 + (n+2) = 0$$

$$\lim_{x \to \infty} \pi'(x) = \lim_{x \to \infty} x^T(x).$$
 If with the

$$a_i x = \frac{1}{e^{\frac{1}{2}} \cdot e^{\frac{1}{2}} \cdot e^{\frac{1}{2}}} \frac{1}{(e^{\frac{1}{2}} - e^{\frac{1}{2}})}$$

$$\lim_{n\to\infty} \delta \Omega = 1$$

$$= \lim_{k \to \infty} \left[ \frac{3s^{-k}}{s^{2k}} + \frac{3s^{-k}}{4s^{2k}} + \frac{3s^{-k}}{s^{2k}} \right] = 1$$

$$= \lim_{k \to \infty} \left[ \frac{3s - 1}{s^{2k}} + \frac{3s - 1}{s^{2k}} \right] = 1$$

$$\Rightarrow -\frac{1}{2}\frac{1}{3}-1$$

$$\Rightarrow$$
  $(n-j)^{-1}$ 

#### r ich

Warract

$$g(y) = f(y) + g(y(0) + g(1)$$

One proper of artisted Soft Clevel Smallers

an geen in below.

Qualitatique.

$$g(x) = f\left(\frac{1}{2}, \frac{30}{2}\right)$$
$$g(x) = f\left(\frac{3}{2}, \frac{3}{2}\right) = 60$$

$$g(y) = -\frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \frac{1}{2} \right) = 21$$

#### 19. (5)

gygyafinikan art aptsecthan-land.

$$\begin{split} \Omega(|\delta| &= \int_{0}^{\infty} |\nabla^{\delta}| \hat{\rho}(t) \, dt \\ 0, \nabla \hat{\rho}^{\alpha} &= \int_{0}^{\delta} e^{-i\theta} |\hat{\rho}(t) \, dt + \int_{0}^{\delta} e^{-i\theta} |\hat{\eta}(t) \, dt \\ &= \int_{0}^{\delta} e^{-i\theta} |\hat{\rho}(t) \, dt \\ &= \int_{0}^{\delta} e^{-i\theta} |\hat{\rho}(t) \, dt + \int_{0}^{\delta} e^{-i\theta} |\hat{\eta}(t) \, dt \\ &= \int_{0}^{\infty} e^{-i\theta} |\hat{\rho}(t) \, dt + \int_{0}^{\delta} e^{-i\theta} |\hat{\rho}(t) \, dt \end{split}$$

$$= \frac{1 - \frac{x}{x}}{\frac{x}{x}} = \frac{e^{-x} - x^{2/3}}{x^{2/3}}$$
$$= \frac{e^{-x} - x^{2/3}}{x} - \frac{e^{-x} - x^{2/3}}{x^{2/3}} [1.97]$$

15. (d):

$$\frac{f(s) = \frac{A}{s(s)} \frac{A}{t} \cdot \frac{A}{s} \cdot \frac{A}{s-1}}{\frac{A}{s(s)} \frac{A}{s(s)}}$$
$$= \frac{A(s)}{s(s)} \frac{A(s)}{s(s)}$$
$$= \frac{A(s)}{s(s)} \frac{A(s)}{s(s)}$$
$$= \frac{A(s)}{s(s)} \frac{A(s)}{s(s)}$$

$$\begin{array}{ll} \Rightarrow \mathcal{N}(s+1) = \mathcal{B}(s) \in \mathbb{N} \\ P(s) & s = 0 \\ \Rightarrow & \mathcal{N} = 1 \end{array}$$

$$O_{i} = -F(5) = \frac{1}{2 - a^{-1}}$$

Max 
$$V(t) = \mathbf{L} \cdot [U(s)] + e^{tt} \cdot C^{T}$$
  
 $V(t) = -e^{tt}$ 

14. (2)

$$\frac{d^{2}v}{dt^{2}} + \frac{\partial v}{\partial t} + \rho(t) = \delta(t)$$

igaing Lepinoc walkin in an ocia indicides we

 $\mathcal{S}_{\{\{a,b\},\{a,$ 

$$(g^2 - 2g + 1) \, \Re (g) = - (2g + 2)$$

$$P(z) = \frac{(2s+2)}{(s+1)^{s}}$$

$$P(s) = -\frac{1}{12(s+1)} - \frac{1}{(s+2)} \left[ \frac{1}{(s+2)} - \frac{1}{(s+2)} \right]$$

$$P(s) = -\frac{1}{2}(s+1) - \frac{1}{(s+2)} \cdot \frac{1}{(s+2)}$$

$$\frac{\partial P}{\partial t} = -\frac{1}{2}(e^{-t} + e^{-t} - t^{2} - t^{2})$$

$$\frac{d\hat{Q}^{2}}{d\hat{Q}_{1,1,1,2}} = -\frac{1}{2} + 2 + 1 + 0$$

$$\frac{|\psi|}{|\psi|} = 0$$

15. (c)

$$\begin{aligned} \left\{ \frac{\sqrt{r}}{2r^2} + \frac{1}{r} \right\} &= 0 \\ \left\{ \frac{r}{2r^2} + \frac{r}{r^2} \right\} &= 0 \\ \frac{r}{2r^2} + \frac{r}{2r^2} \left\{ \frac{r}{2r^2} + \frac{r}{2r^2} \right\} \\ &= \frac{r}{2r^2} \left( \frac{r}{2r} \right) + \frac{r}{2r^2} \left( \frac{r}{2r} \right) \end{aligned}$$

$$S^{2m}_{-}(S) = \mathbb{I} \circ \mathcal{J}(m) = \mathbb{S}$$

$$\begin{split} (x'-1)F(x) &= 1 \\ &= \frac{2}{x'-1} \\ &= \frac{4}{x^2-1} \end{split}$$

Hi. (c)

$$\begin{aligned} u &= -\pi^{1} \, \mathcal{G} = 1 \\ \eta &= \frac{(1 - \frac{1}{2})^{2}}{2\pi^{2}} \frac{f_{1}}{f_{2}} \end{aligned}$$

$$\exp \left( \frac{1}{2} \exp \left( \frac{2\pi g}{2} \right) + \frac{2\pi g}{2} \right)$$

17. (b)

Given, 
$$|\hat{\eta}_{D_1}| = \frac{\Gamma - 2g \cdot g}{168 + 369} = 1$$

Using in this supplement and

$$\rho(0^{\frac{1}{2}}) = \lim_{\epsilon \to \infty} \left( \psi_{\epsilon}(\underline{\epsilon})^{\frac{1}{2}} \right)$$

$$\begin{aligned} & (0) \cdot y = \frac{1}{2 + 3} \frac{3(2x + 3)}{x^2 - 16x + 2x} \\ & = \frac{1}{2 + 3} \left[ \frac{3 - \frac{1}{2}}{4 - \frac{1}{2}} \frac{1}{2^2} \right] = \frac{3}{4} - y. \end{aligned}$$

18 Sci.

िस्म

$$\frac{\partial g}{\partial x} z = \frac{\partial g}{\partial x} = \frac{\partial g}{\partial x} = 0 \tag{1}$$

lawing the Labitan's engineer of the effective  $\alpha_{\rm L}^2$  with  $\alpha_{\rm L}^2$ 

$$\begin{split} S^{1}(\theta,\phi) &= SY(\theta) + p^{2}(\theta) + p^{2}(\phi) + p^{2}(\phi) + 4|Y(\phi)| + 0 \\ (S^{2} + 10 + 4|Y(\phi)| + 2|Y(\phi)| + 2|Y(\phi)| + 4|Y(\phi)| \end{split}$$

$$-1^{-2} = 6x + 4 - 7(5) + 8x + 1 - 4x$$

$$S(y) = \frac{x^2 + \frac{1}{(x + y)}}{(x^2 + \frac{1}{(x + y)})} = \frac{(x + y)}{(x + y)^2}$$
$$= \frac{1}{(x + y)} + \frac{2}{(x + y)^2}$$
$$y(x) = x^2 + 3x \cdot y^2$$
$$y(x) = x^2 + 3x \cdot y^2$$

$$dx = -x(\hat{q} + q^{-1}) \cdot \hat{g}_1 \vec{\sigma}^2$$

19. (5)

$$\frac{e^{2N} + 258 \, \text{fm} + 357 \, \text{ft}}{2^{3} + 25 \cdot 3^{3} \cdot \frac{1}{2^{3}} \cdot \frac{1}{2^{3}} = \frac{a + 26}{2^{3} + 26}$$

20 (c)

$$f(z) = \int_{-1}^{\infty} f(z) dz =$$

21. (b)

$$dP(0) = \int\limits_{0}^{\infty} d^{2} t d^{2} t dt$$

22. 54.

$$\begin{aligned} & (0) = 2x^2 + 3x^2 + (-1) 2^2 \\ & (1) = 3x^2 + 6x \\ & (1) = 1 \\ & (2)^2 + 6x = 0 \quad x = -1 + 1 \quad (--2) (-1) + 1 \\ & (2)^2 + 6x = 0 \quad x = -1 + 1 \quad (--2) (-1) + 1 \\ & (2)^2 + (-2)^2$$

23 (a)

$$L(DS(\alpha,i)) = \frac{1}{s^2} \frac{d}{dt^2}$$

P4. 76

Subject of the subject of heaving and quivalence subject of the su

$$\frac{\partial^2 \phi}{\partial x^2} = \frac{\partial^2 \phi}{\partial x^2} = \frac{\partial^2 \phi}{\partial x^2} = \frac{\partial^2 \phi}{\partial x^2}$$

is aftermore lungifor

25. (J)

er. Til Amiliary tijden umon.

$$\frac{O(1/4)}{2} = \frac{1}{2}y(1) - 3(x/3)$$

$$g_{5/3}(\theta(\theta)) \frac{1}{3} (12) = 3.25 \beta,$$

$$V_i(i) = \begin{bmatrix} 5 & \lambda 15i \\ \vdots & \ddots & \vdots \\ 6 & \beta \end{bmatrix}$$

$$|s(z)| = \frac{a}{\left|z - \frac{1}{c}\right|}$$

$$\begin{aligned} \delta \omega_{i} &= \frac{\alpha}{\left[\frac{1}{2} \frac{1}{i}\right]^{2}} e^{-\frac{i}{\beta}} \\ &= \frac{34}{\left[\frac{1}{2} \frac{1}{2} - \frac{3}{2}\right]} \\ &= \frac{34}{\left[\frac{1}{2} \frac{1}{2} - \frac{3}{2}\right]} \left(3 + \frac{1}{2}\right) \end{aligned}$$

$$y_{\mathcal{S}_{k}} = - y_{k} \lambda + (S^{k} e^{\gamma_{k} R_{k}} - \overline{Z}^{*} e^{-1/2}) (Q)$$

27 (61

$$\operatorname{prod}_{\mathbb{R}^n}(\{(n):[0,1],S,\mathbb{R}^n\})=\mathbb{Q}.$$

$$- = (1, + (-1), 0) \wedge \leq T$$

April 5 Teller 65 (5

$$Y(t) = \frac{\pi}{4} + \frac{\sqrt{3000}}{\pi} \left[ \frac{3000}{5} + \frac{3000}{3} + \frac{30000}{5} + \dots \right] - \frac{\sqrt{300}}{2} + \frac{5000}{2} + \frac{1000}{3} + \dots$$

 $g_{0,\lambda}=g_{0,\lambda}$  a point of given min  $g_{0,\lambda}$  the Yudot

whereas regions 
$$\frac{1}{2} \left[ \hat{\gamma}(t^*) - (|0|^2) \right],$$

$$\text{gradies} \ \hat{\eta}(z) = \inf_{z \in \Omega} [z, -z] + 0$$

Personal of Walket

$$\frac{3}{2} = \frac{3}{2} \cdot \left[ \frac{3}{2} \left( \frac{1}{2} + \frac{1}{3} \cdot 1 \right) \right]$$

$$= \frac{1}{4} \cdot \frac{1}{12} \cdot \frac{3}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{8}$$

28. (b)

$$f(y) = \frac{1}{2}$$

egorial difference

29. (c)

$$\begin{aligned} \sigma \omega &= \frac{\left(-2 - \sigma \cos \phi\right)}{2 - 2 \cos \phi} \\ &= \frac{2.5 \cos \phi \cos \phi}{1.00 \cos \phi} \end{aligned}$$

$$q_1 = \frac{2}{\pi} \frac{1}{6} \tilde{n}(0) \left( \frac{1}{2} \sqrt{\frac{2\pi^2}{3}} \right) dx$$

$$= \frac{1}{\pi} \int_{0}^{\pi} f(x) \, dx \, dx \, dx = \frac{7}{\pi} \int_{0}^{\pi} 2 \left( 2 \left( 2 \left( 2 \left( x \right) \right) \right) \right) \, dx$$

$$\begin{split} &=\frac{4}{6}\left[\frac{\sin \alpha v}{n^2}\int_{0}^{\infty} -\frac{2^{\frac{1}{2}}}{n}\frac{\sin \alpha n}{n} + \frac{\sin 2}{n}\right] \\ &=\frac{2}{6}(1+2)=0 \end{split}$$

Align 8190:



# Second Order Linear Partial Differential Equations

#### Introduction

We are about to allow 4 so gib type of particulative and occurives (FDEs), the report of serfactor RS self-train about, otherwise expension we equation that contains two or increases an expension of the servative expension expensi

$$\frac{d^2}{d^2} \frac{\partial g}{\partial g} = d^2$$
 (one find a greathest saleuten of sites  $\frac{d^2}{d^2} \frac{\partial g}{\partial g} = d^2$  (see symptotic allowed of sites)  $\frac{d^2}{d^2} \frac{\partial g}{\partial g} = d^2$  (we symptotic ships from this equation)

## 8.1 Classification of Second Order Linear PDEs

Concide the general Levino is sable Jorda Treer persond llerented on interior 2 variables ett cansient is efficients

$$S^{Q_{k+1}} \vdash S^{Q_{k+1}} = S^{Q_{k+1}} + S^{Q_{k+1}} + S^{Q_{k+1}} + S^{Q_{k+1}} + S^{Q_{k+1}} + S^{Q_{k+1}}$$

i skilm equation we elo sona i hader, si ô la idiopernativa be zero. De illea i sa demini rent o ca 19 e nos. Pro pinne liec and hell separ chiex patton o intergety poda i rent of tatype, so classifical fieldo.

 $\mathbb{R}^{n+1}_{n} = \operatorname{PaperC}_{n}(\mathbb{R}^{n}) + \operatorname{Postanian}_{n}(\mathbb{R}^{n} \otimes \mathbb{C}^{n}) + \operatorname{Postanian}_{n}(\mathbb{R}^{n}) + \operatorname{Postanian}_{n}(\mathbb$ 

 $^{\circ}$  B  $^{\circ}$  -limit 0, that the equation is painting period to the liest contains an equation is well such example.

Here  $92 \times 3$ , then the Niperiorn of Helellights. The representative in one successfully

#### Example:

. Consider the once impresonal compact while equation  $\Omega_{ijk} = J_{ijk} + \Omega_{ijk}$  , also in

Ji can consequentes i Sogni  $Q_i$  i Son i Cultinos a Hillpronto a Pil VIII Cutoff o IIII los capacidinentes Ribinos atés compositados.

## 8.2 Undamped One-Dimensional Wave Equation; Vibrations of an Elastic String

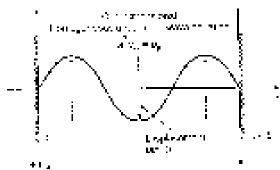
On sider a six explain that restring the run is all equal points) in Suppose the two cross bit express a combined using point in a mosuppoint such as they will after two Assume the colour is sent points of the provides trapposed enter that it at 0 x + x 1, at a strong must be 0, a given by the disobact momentum in the common size of the background or expression and the disorder manners was constituted.

White the constant exertions will a given by the sense that  $x^2 = \infty$  such that  $x \in \mathbb{R}$  be in that properly in expect function where the execution is a way to make the constant of the Paramentary function of the property of the proper

$$\omega(0,0)=0$$
 and  $\omega(0,0)=0, \tau>0$ 

Precisely contribute period in the latter of the strong are pointed in lead position. Therefore, they we have the contributions  $\Gamma$ 

Indicately, we say the interferent and due to the law than it contains the except diget is the vertex  $oldsymbol{n}$  $g_{\mu}$  . Let (x,y) it is a follows in a line  $u_{\mu}$  , we path y – x and y in the critical strong following that he citing ysigned as symmetry, in place. The test first wave semi, or from the state is seperal of symmetric symmetri eathorite t



Hoper, of all your eye is the first in in it is a countries of the re-

Laboration in the Contract of 
$$\mathcal{F}_{-1} = S_{-1}$$

$$\{0, v, \gamma \in V_{n+1}\} \in \Gamma$$

(Douglasty of military)

$$\{(i,j): i,j \in \mathbb{Z}_{p}\}$$

Origina pomotacionia.

$$\psi(g,x) = f(x) \text{ and } \psi(x,0) = g(x).$$

$$(1,3)^2$$
,  $(2)^2 = 31$ 

 $y_{0}\left( p_{0}, q_{1}, u(y_{1}) + 20z\right) \left( f_{0} \cap p_{0} \circ tours_{0} \right) p_{0} * a_{0} e_{0} u_{0} + f_{0} \circ t_{0} \circ t$  $g_{ij} = X^* T \circ \mathcal{A}(A_j + X_i^{**}) \cot (12.55 We extract)$  . Its 64.5 West

If yiding both sides by  $s^* \, ^{kT}$ 

$$\frac{N^*}{N} = \frac{f^*}{\sigma^{1/2}}$$

As in the neck conduction  $\theta$  and (x,y) is a status for cone don Letter x with  $a^2$  calls further of y and y > 0where the same is the property of the state of the same  $a_{ij}$ 

$$\frac{x^{n}}{x} = \frac{x^{n}}{\sqrt{x}} = 2$$

$$\frac{x^{n}}{x} = 2$$

$$= x^{n} + 2x + 4x + 2x + 6$$

$$= x^{n} + 3x + 3x + 6$$

$$= x^{n} + 3x + 6$$

$$= x^{n} + 3x + 6$$

The you will also as a fit in a algor repetable.

$$\begin{array}{lll} f(0,0) = 0 & = & \lambda(0) \, T(0) + 0 & = & \delta(0) + 0 & = 0 \\ f(0,0) & f(0) + \delta(0) + f(0) + 0 & = \lambda(0) + 0 & = 0 \end{array}$$

continues. Therexit, which apparation or variables, will alive willing a million continues to the region million gaps, in the within amonthmentary conductions.

$$\chi^{(1)} = \lambda X = 0$$
,  $\chi^{(2)} = 0$  one  $\lambda(z) = 0$ .  
 $T^{(1)} = \mu^2 \lambda X = 0$ .

Then has stop, also solve the eigenvalue on the  $\alpha$ 

$$x^* + 2x^* + 0 + 260 \mathbf{i} = 0$$
 and  $\mathbf{S}(0) = \mathbf{U}$ .

he concludes a grown system ( ) a nagative

Experiently (1996)

$$\xi = \frac{\partial^2 \eta^2}{\partial t}, \qquad \gamma = 1/2/3$$

$$|\mathcal{S}_{0} = \operatorname{cin} \frac{\partial T f}{\partial t} = (n - 1, 2, 3)$$

Next, subditional the eigenvalues round above in turns suggest a country to the T(t) S(t) putting a particle resp.  $\lambda$  ) is the court and Theory co.

$$\int_{0}^{\infty} \int_{\mathbb{R}^{2}} dt \, \frac{dt^{2} dt^{2}}{dt} \, dt \, = 0.$$

If all second order home  $g_{\theta}$  ledge incorrections by the constant position in this congruence such specifical  $f^{(n)} \mapsto g^{(n)} \otimes g^{(n)} \otimes f^{(n)} \otimes g^{(n)} \otimes g^{($ 

$$\rho = \left(1, \frac{10.5}{10.5}\right)^{\frac{1}{2}}$$

Inuciate will the gray simple home in

$$2/2 \le A_0 \cos 2 \frac{4\pi m^2}{r} + E_1 \cos 2 \frac{4\pi m^2}{r}, \quad n = 1, 2, 3$$

Multiplying each go not K and  $\mathbb{F}_p$  to getter due the map, we tright operation from or the treathrest so not ÷αγο άξων απινή, rbellhends hyminis ge

$$\mathrm{cit}(A^{-1}) = \sum_{i=0}^{n} \left| A_i \otimes i \cdot \frac{\partial A_i I}{\Delta} - \mu_{i,i} \otimes \mu^{-2n \cdot n \cdot 1} \right| \mathrm{d} A \frac{\partial B_i}{\Delta}.$$

 $\textbf{figure an inversely of the particles of the constraints for an assume the formula of the two relatives <math>(i,y_{12},y_{12},y_{13},y_{$ Set t=0 and so by the fact time condition it, with the Lock; displaced entropy to string L(t,0) = 0 by we 6- A-

$$\begin{split} u(x,0) &= \sum_{n=0}^{\infty} \left( A_n \operatorname{vec}(0) + A_n \operatorname{sin}(0) \right) x e^{\frac{2A_n x}{L_n}} \\ &= \sum_{n=0}^{\infty} A_n \operatorname{sin} \frac{a_n x_n}{L} - I_n x_n^2 \end{split}$$

Therefore, we kee it at the innial disease ement (b); necessite on a Figure is a consectioned by; near sile and edictically uncline. This is all vincons matrix tries to expend name habitation in precisionar (or per all big  $0 + s + 0 \text{ dense } A_j \text{ or than } k + 1 \text{ by the rotation } A_j = \frac{1}{2} \text{ will see al, are the corresponding } B_j \text{ the } k + 2 \text{ second or than } A_j = \frac{1}{2} \text{ and } A_j \text{ are the corresponding } B_j \text{ the } k + 2 \text{ second or than } A_j = \frac{1}{2} \text{ and } A_j = \frac{1}{2} \text{ and } A_j = \frac{1}{2} \text{ are the corresponding } A_j = \frac{1}{2} \text{ and } A_j = \frac{1}{2} \text{ are the corresponding } A_$ almei ∃atg

$$\mathcal{F}_{n} = (\hat{\omega} + \sum_{i=0}^{n-1} f_{i}^{*} \hat{\eta}) \sin \frac{\partial \hat{\omega}_{n}}{2} \, dv$$

45. So that the still a sequence of the shell signary, are described below  $\psi_{2}$  by the indial displacement. They  $\pi$  a consciency independent or the other sequence  $\Sigma_{\pi}$  which are the Laberty by the excend in  $\mathbb{N}$ which find , the introduction is all velocity of the sking. To line  $Q_p$  we differ materially,  $\{v_i\}_i$  with espectic (specific to all p $\mathsf{FSA}(\mathsf{vA}(\mathsf{sd}_{\mathcal{A}}),\mathsf{val}) = \mathsf{val}(\mathsf{val})$ 

$$G_{i}(\mathbf{r}, \mathbf{r}) = \sum_{k=1}^{i-1} - H_{i} \frac{d^{2} x}{i} \operatorname{Sep} \frac{S(\mathbf{r})}{i} + H_{i} \frac{\mathbf{T} \mathbf{U}}{2} \operatorname{tr} \times \frac{S \nabla x^{i}}{2} \cdot \mathbf{g}_{1} \frac{d^{2} \mathbf{U}}{i}$$

 $\delta C^{*}$  in Gland equate 1 with g(x):

$$\label{eq:definition} \mathcal{G}(\mathbf{r}, \mathbf{f}) = \sum_{i=1}^{n} \mathcal{G}_{i} \frac{\partial \mathcal{G}_{i}}{\partial t} \otimes \mathbf{r}^{(i, \mathbf{r}, \mathbf{f})} = \mathbf{g}(t)$$

We see the g(t) abodition that for easing some Face all aboditions perceives  $+\infty$  in graph 225 in reconstruction of  $\mathbf{e}$  is given by the structure of the proof of the sequences

$$\mu_{1,1}^{(i)}(x,t) = \sum_{j=1}^{n} 2^{j} \sum_{k=1}^{n} \frac{\partial x_{k}(x)}{\partial x} \otimes t^{j} \frac{\partial x_{k}(x)}{\partial x} = \lim_{k \to \infty} 2^{j} \otimes t^{j} \frac{\partial x_{k}(x)}{\partial x}$$

 $\zeta_{\rm GM,part}$  inducations to without the singlest relative  $^{\rm MO}$ 

$$P_{\frac{1}{2}}\frac{2NR}{R} = \frac{2\pi}{4\pi} - \frac{2\pi}{4\pi} \int_{\Omega} f(x)dx e^{ix} dx =$$

jhe eithe.

$$g_{ij} = \frac{1}{2\pi i} \pi_{ij} + \frac{2}{43\pi} \frac{1}{2} g(a) \delta(a) \frac{\partial G_{ij}}{\Delta} da$$

As we have seen that with a performance  $\omega$  with the indicatoring equation in the disconnection of a column of a column  $\omega$ In talked  $D_{ij}$  To recompose the Hermited independent of containing the PH consist physical containing the  $D_{ij}$  $\pm \phi$  ,  $\Rightarrow$   $\phi(A_1+\phi)$  and  $\phi(A_2+\phi)$  in the range of regions  $\phi(A_1+\phi)$  in the velocity  $\phi(A_2+\phi)$  and  $\phi(A_2+\phi)$  $\rho(\sigma)$  in a primary total ergon is 0.15

Let r whole another our size 0 immorph J is rew  $\Gamma$  in those Ziewsy  $r_{I}$  socil degree when other  $r_{I}$  for g(r)  $\sigma$ 

Special page . Non-zero  $\epsilon$  includes accres to enswitter vectors (x) = 0,  $0(x) \neq 0$ .

 $\mathfrak{H}_{1,1} \otimes \mathfrak{H}_{2,1} = \mathfrak{H}_{1,1} \oplus \mathfrak{H}_{2,1} \oplus \mathfrak{H$ 

$$A_{q} = \frac{1}{2} \int_{\mathbb{R}} f(\hat{q}|s) \, \frac{\partial \tau_{\mathcal{F}}}{\partial s} \, ds, \qquad r = 1, \pm 3.$$

Пенінг.

$$c_{(n)}(g) := \sum_{n \in \mathbb{Z}_n} c_n \log g \frac{\operatorname{ange}}{n} \operatorname{Ad} g \frac{\operatorname{ange}}{n}$$

#### ILLUSTRATIVE EXAMPLES

#### ∃xarmiA

уд ур гүр үн өчүйлөн акаа жахарый өнг.

$$0 \ y_1 = y_2,$$
  $0 \ x < 5, \ 1 > 0,$   $y(0, 1) + 6,$  and  $y(5, 1) = 0,$   $y(5, 1) = 0,$   $y(5, 1) = 0,$   $y(5, 1) = 0,$   $y(5, 2) = 0,$ 

#### Schiller:

 $(p_{i}, p_{i}, p_{i}) \in (p_{i}, p_{i}) \cap (p_{i}, p_{i}, p_{i}) \cap (p_{i}, p_{i}, p_{i}, p_{i}) \cap (p_{i}, p_{i},  

Try general solution is, therebils &.

$$g(\chi_{i,j}) = \sum_{r=0}^{\infty} \left( A_r \cos \frac{\lambda(r)}{r} + i \lambda_r \sin \frac{\lambda(r)}{2} \right) \sin \frac{r}{r}.$$

Suppose g(z)=0, it must be the ratio  $\theta_0=0$ . One just the contribution. We also use the  $\phi(z,0)=0$  of zshapity in the round of a figure transporter. The laters we just peak to exist of the corresponding five out sind poell crange.

$$\begin{split} & \Delta_{0} = \partial_{0} \cdot A \\ & \Delta_{0} = b_{00} = 1 \\ & \Delta_{0} = b_{00} = 0, \\ & \Delta_{0} = b_{00} = 0 \text{ for } a^{+} a^{+} \text{or } a > 0 \text{ for } a^{+} 25. \end{split}$$

Hence, the particles ( 20km ands

 $g_{\rm tot}(g) = d_{\rm total}(S, m \sin(\pi x) + \cos(S, d) \sin(2\pi x)) + 3\cos(3\pi x) \cos(3\pi x) \sin(3\pi x)$ 

Ехатр с.

Set-allha chep manstar si vere pron a n

$$\begin{array}{lll} 2c_{i,j}^{2} = a_{i,j} & \text{then } 0.5 & \text{then} 0, \\ 0.00 & 0.00 & \text{and} & \text{then} 0.5 & \text{then} 0, \\ c_{i,j}^{2} & 0.00 & \text{then} 0.5 & \text{then}$$

Soutien

As on the entry are example, while  $\theta_1(s)$ ,  $s=\theta_0$ , and s=s

to Historia grand substance and ig-

$$h(\mathbf{z}, \mathbf{r}) = \sum_{k=0}^{\infty} \left( k_k \right) \cos \frac{2\pi k_k}{3} + 2 g_k \sin \frac{32\pi g}{2} \cdot g_k \cos \frac{4\pi g}{5}$$

that i(r) = 0, consequently at  $A_r = 0$  was contained to  $a_r$ . Planettic vencety g(r) = 0 is a contained function this extend to per venceure and Triplettic Heart-state expense, if  $g_r$  is conductive in such that f(r) = 0, then eq. f(r) = 0 is f(r) = 0.

$$\begin{split} D_{\mu} &= \frac{2}{32\pi \pi} \int\limits_{0}^{\frac{1}{2}} g_{\mu}^{\mu} r(s) \, \gamma^{\frac{2}{2}+\frac{2}{3}} g_{\mu}^{\mu} \int\limits_{0}^{0} (s) \, \frac{7\pi \gamma}{2} \, ds \\ &= \begin{cases} \frac{4\pi \gamma}{32\pi} g^{2} & \text{if } = \pi\pi \pi \\ -2\pi \gamma^{2} & \text{otherwise} \end{cases} \\ -2\pi \gamma^{2} + \frac{6\pi \gamma}{32\pi \gamma^{2}} \frac{6\pi \gamma}{32\pi \gamma^{2}} \int\limits_{0}^{0} (s) \, \frac{1}{2} $

lata xx.re.

## 8.2.1 Summary of Wave Equation: Vibrating String Problems

indiversity at property and the bracking storage of original, secure was in secretarized by the gipping weight and without damping well-becomes thy the not reported to particle to we equation inhibits and own was to property

$$A^{2}(x)_{ij} = a_{ij}^{2}$$
  $0 < x < t \le 0$ ,  $A^{2}(x)_{ij} = 0$ , and  $A^{2}(x)_{ij} = 0$ ,  $A^{2}(x)_{ij} = 0$ ,  $A^{2}(x)_{ij} = 0$ ,

Միթիգանին մեթիկայի ջո

$$\mathcal{A}(x,y) = \sum_{i=1}^{n} \mathcal{N}_i(x,y) \frac{25n^2}{2} + \mathcal{L}_i(y) \frac{25n^2}{4} \mathcal{L}_i(y) \frac{25n^2}{4}$$

The pointing residences the found by the himpons

$$\begin{split} & i_{\rm W} = \frac{2}{4} \int_{\mathcal{S}} \delta(\mathbf{r}) \hat{\mathbf{s}} + \frac{\sigma_{\rm min}}{4} \, dz_{\rm min} \, d$$

. Traixiliu, on east femings a consistit, for contain in pegation speed in Loth of contant of the material me Vibranti, responsables (nell call volvelly given pena) – ", et and baction file was big one that it ex

Excrose.

 $T_{
m coll}$  , which simplify at inglumblem of the given in this coll (joint,

$$A^{(i)}_{i,j} = 0, \quad 0 \land x \in \pi, \quad y \in G,$$
 $A^{(i)}_{i,j} = 0, \quad y \in \pi, \ \, 0 = 0.$ 

$$(e_i)\cdot (g_i\circ (g)=0, \quad (i=0, (e_i)\circ (f)=0.$$

$$(50.06) (50.001) = 50.4 (5) + 1000 (2a) + 156 (5a) + 245 (6b)$$

 $\underline{2}_{ij} = S_{ij}^{ab}(x_i, x_i, x_j) \otimes (x_i, x_j) \otimes (x_i, x_j) \otimes (x_i, x_j) \otimes (x_i, x_j)$ 

$$\begin{aligned} & 100 \, (x_0 + y_0) \cdot (2 \times x_0 \times x_0) \cdot (x_0 \cdot 0) \\ & = 0.0, \, (y_0 + y_0 \times x_0 \times x_0) \cdot (x_0 \times x_0 \times x_0 \times x_0) \cdot (x_0 \times x_0 \times$$

g. G.A.E. is standing string problem.

$$\mathbf{r} \in \mathbf{r}_{\mathbf{p}}$$
 ,  $\mathbf{r}_{\mathbf{p}} = 0$  and  $\mathbf{r} \in \mathbf{r}_{\mathbf{p}} = 0$  and  $\mathbf{r} \in \mathbf{r}_{\mathbf{p}} = 0$  ,  $\mathbf{r}_{\mathbf{p}} \in \mathbf{r}_{\mathbf{p}} = 0$  and  $\mathbf{r} \in \mathbf{r}_{\mathbf{p}} = 0$  ,  $\mathbf{r}_{\mathbf{p}} \in \mathbf{r}_{\mathbf{p}} = 0$  ,  $\mathbf{r}_{\mathbf{p}$ 

2. Carry that the DiAHa Tix modulity,  $\omega_{N}(t) = [O(r + \Delta) + r(t) + 2t]/2 \approx Ha + O(t)$  to include equal to  $\{(r, r) : r(t) \geq V(t)\}$  to the limit  $\{(r, r) : r(t) \geq V(t)\}$  to the latter of  $t \in \mathbb{R}^n$  that the chocking  $\{(r, t) : r(t) \leq V(t)\}$  and the sample of  $t \in \mathbb{R}^n$  that the chocking  $\{(r, t) : r(t) \leq V(t)\}$  and the sample of  $t \in \mathbb{R}^n$ .

$$\begin{aligned} & \frac{a_{1}a_{2}}{a_{3}a_{4}} - a_{11} & & 0 & a_{2}a_{3} & c_{2}a_{3} & c_{3}a_{4} \\ & a_{3}a_{4} - a_{11} & & 0 & a_{2}a_{3} & c_{3}a_{4} & c_{3}a_{5} \\ & a_{3}a_{4} - a_{11} & & a_{3}a_{4} & c_{4}a_{5} & c_{5}a_{5} \\ & a_{3}a_{4} - a_{4}a_{5} & & a_{3}a_{5} & c_{5}a_{5} & c_{5}a_{5} \end{aligned}$$

5. Use the multiposition of a concliver aptectory while into any error course in partition where we shifted by uping multiposition and example with jumping models with each partition of a contract of the manner read of example and in contact our line is shown in the ly should be writted directly.)

$$\begin{split} & \langle \psi^{\dagger} \psi_{0,j} - \psi_{0,j} \rangle & = \langle \psi_{0,j} \psi_{0,j} \rangle + \langle \psi_{0,j} \psi_{0,j} \rangle \\ & \langle \psi_{0,j} \psi_{0,j} - \psi_{0,j} \psi_{0,j} \rangle & = \langle \psi_{0,j} \psi_{0,j} - \psi_{0,j} \psi_{0,j} \rangle \\ & \langle \psi_{0,j} \psi_{0,j} - \psi_{0,j} \psi_{0,j} \rangle & = \langle \psi_{0,j} \psi_{0,j} - \psi_{0,j} \psi_{0,j} \rangle \end{split}$$

g=-3 while is all a displacement of the offinging p , which is  $\frac{1}{2} = 2 \log 2 \cdot \delta (x + y) + 2 \cdot \delta (x + y)$ 

#### ALAWY IN

- $1, \qquad (d) \quad \text{with } t := \sup_{t \in \mathcal{L}} \exp\{ e(t-t) e^{t} X_t + 1 \text{for all } \{ f(t) \text{ on } g(t) \} + 2 \text{for } g(t) \text{ of } f(t) \}$ 
  - $g(t) \cdot g(t,t) = 1g(t,t) \cdot g(t) \cdot g(t) = g(t,t) \cdot g(t) \cdot g(t,t) + G(t,t) \cdot g(t,t) \cdot g(t,t)$

$$\theta = -\cos(-\ln \alpha) \operatorname{qenorm}(sol_{\alpha}(i), (i-|\mathcal{M}_{\alpha}(i)| + \delta) = \theta + \sum_{k=1}^{\infty} \left( H_{N} \operatorname{cos}_{k}(\frac{d(i,k)}{i} - \mu_{k}(s)) \frac{\operatorname{cos}_{k}(i)}{\frac{1}{2} - \mu_{k}} \right) \operatorname{cos}_{k}(\frac{d(i,k)}{i})$$

The belief and clubby each will be only the form that

$$d_{i,j} = \frac{1}{r} \int_{\mathbb{R}} f(\mathcal{F}_{i} \otimes Z_{i}) \mathcal{F}_{i,j} = \frac{Z_{i,j}^{-1}}{r} q_{i,j}(Q_{i,j}) \frac{d^{2} q_{i,j}}{dr} Q_{i,j} \frac{d^{2} q_{i,j}}{r} \int_{\mathbb{R}} g_{i,j}(\mathcal{F}_{i,j}) \frac{d^{2} q_{i,j}}{r} \frac{d^{2} q_{i,j}}{r} \int_{\mathbb{R}} g_{i,j}(\mathcal{F}_{i,j}) \frac{d^{2} q_{i,j}}{r} \frac$$

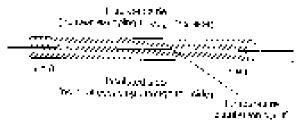
Fig. The spectration disclosure is a finite assemble in (0, 0, 0) and (0, 0) are the same construction.

## 8.3 The One-Dimensional heat Conduction Equation

Candidate that parent englished in the new section are set such a first paragraphs as  $a \in A$ . Suppose that is a configuration of the paragraphs  $a \in A$  in the standard paragraphs  $a \in A$  and  $a \in A$  and  $a \in A$ .

How k>0 cut of parameters any discontant of k but the first noise tentometer  $n_k(k)=n_k(n_k)$ occur only in the expression from the ensemble formula  $(a,b,a) \in \mathbb{R}^n$  where  $(a,b,a) \in \mathbb{R}^n$  and  $(a,a) \in \mathbb{R}^n$ i is (MQ) algority the Large at this substitute for  $x_0$  is fixed to contain its general conventions of iГантаж сородноськай

Where the constitution  $\mathcal{E}$  is the boundary of the tenth of  $\mathcal{E}$  in  $\mathcal{E}$  . Let not a more apply the form  $\mathcal{E}$  in  $\mathcal{E}$  in  $\mathcal{E}$  . u – consile si estecció coal, militer hatena lei con na A



For the time a with the heat a with the behavior of the regard value of a and a parameters a .

утня ор досілька війа і

$$\mathbb{P}^{2}\left( f_{i,r}=f_{i,r}\right) =\left( 0,\left( c+\sqrt{r}\right) \right) ,\text{ so }j.$$

IRO an any good (1975).

$$S[0,\widetilde{\eta}]=0,\ q_{0}(1,\ldots,q_{2}(\eta))\in \mathbb{N}_{q}$$

(Fig. 4) condition?

$$S(k-1) = f(k)$$

#### 8.3-1 Conduction Problem

indigenerally due to other interfacing deviations in reinig contents are a finencial decisional submission moderner aboritolism in, of Isocopia in George The general agraph to

$$\cos \gamma = \sum_{i} \mathbb{E}_{i} a_{i} e^{-i \frac{\pi}{2} \log a_{i}} e^{-i \frac{\pi}{2} \log a_{i}}$$

Source to Discontraction of A many which would in Applicage.

$$\label{eq:condition} c_{i}(z,0) = \sum_{n=0}^{\infty} (C_{n}x)^{-iC_{n}/2} = r(z)$$

We stought a the appropriate assign, which is the interpretation operation of the  $p_{ij}$  $S_{0}$  Since the tribution of the solution of the solution of the  $S_{0}$  of the parameter we will be considered to  $S_{0}$  ,  $\Theta$ केल effect district telli (ile temodd periodd period i glyng, en or period by That is

$$f(x) = -\sum_{i=1}^{n} \phi_i(x) \eta_i \frac{\eta \sigma_{i,k}}{n}$$

To elefond, the political experience of the Hystering z little coallinearly  $\mathcal{C}_z$  = z , where  $z_z$  z = z , our explanation coefficients with the sort per various state  $f(x) \in H_{\alpha}$  , which describes the  $\alpha$ 

$$Q_{ij} = b_{ij} + \frac{2^{d_i}}{2^{d_i}} q_{ij} (\mathbf{a})^{ij} \frac{\mathbf{e}_{\mathbf{a},j}}{i} q_{ij}$$

#### ILLUSTRATIVE EXAMPLES

#### **Example**

NAME to recognize the propagation

$$\begin{aligned} & \hat{\mathcal{O}}(\mathcal{O}_{i_1} = \mathcal{O}_{i_2}) & \hat{\mathcal{O}}(\mathcal{O}_{i_1} \times \mathcal{O}_{i_2}) \\ & \hat{\mathcal{O}}(\hat{\mathcal{O}}_{i_1}) & \hat{\mathcal{O}}(\mathcal{O}_{i_2} \times \mathcal{O}_{i_2}) \\ \end{aligned}$$

$$y(x,y) = 2\pi i \left( \sin (x + \sin(2\pi x)) + \sin(2\pi x) \right)$$

#### Schillan:

Since the wondows form of the restrict rate of equation  $e^2 d_{\mu} = \lambda_{\mu}$  we less that  $e^2 = \lambda_{\mu}$  is the constitution  $e^2 = 3$ . There are  $\lambda_{\mu} = 3$  and  $e^2 = 3$ .

$$\begin{split} \gamma(\mathbf{v}_{-1}) &= \sum_{i=1}^{n} \left( \lambda_i \cdot \mathbf{0}^{-\mathbf{p}^{T} \cdot \mathbf{v}^{T} \cdot \mathbf{v}^{T} \cdot \mathbf{v}^{T}} \mathbf{v} \cdot \mathbf{v} \cdot \frac{\mathbf{c} \mathbf{n} \cdot \mathbf{x}}{2} \right) \\ &= \sum_{i=1}^{n} \left( \lambda_i \cdot \mathbf{v}^{T} \cdot \mathbf{v}^{T} \mathbf{v}^{T} \cdot \mathbf{v}^{T} \cdot \mathbf{v}^{T} \cdot \mathbf{v}^{T} \right) \overset{\mathrm{d} \mathbf{n} \cdot \mathbf{x}}{\mathbf{v}^{T}} &= 0 \end{split}$$

Figure 4 (notice  $(n_0)$  is a leasty through two equivalent of the extension of converge expression of the graph of  $(n_0)$  and  $(n_0)$  is a second of the 
$$\begin{aligned} &C_0 = \lambda_0 = 2\\ &C_0 = b_{00} = -4,\\ &C_{00} = b_{00} = 1,\\ &c_0 = c_0 = 0, \text{ is all offerous } 0.25, 10, \text{ or Si.} \end{aligned}$$

• юлож.

$$|n(x)|^2 = 2e^{-2(x+1)^{1/2}} (4^n (x,x)^{1/2} e^{-2(x+1)^{1/2}} (1 + x)^{1/2} e^{2(x+1)^{1/2}} e^{2(x+1)^{1/2}}$$

#### e-compres

Se provi tropal, suma a llancomena i si a cartina país. Si likastens (i fratis se ve no folgent) medicanda par in com

$$\begin{aligned} & \langle \phi_{i,j} \rangle = (q - \tilde{\phi}) \cdot \tilde{\phi} \cdot \phi \cdot \tilde{\phi} \cdot \tilde{\phi} - \tilde{\phi} \cdot \tilde{\phi}, \\ & \langle \phi_{i,j} \rangle = 0 \text{ the } (\omega(\Sigma, i)) = \tilde{\phi}, \\ & \omega(\pi, \tilde{\phi}) = z. \end{aligned}$$

#### 501,500

The declaration 5.9.1

$$\varphi_{(k,l)}(j) = \sum_{i=1}^{m} \tilde{\varphi}_{i,l}^{(k-1)^{2} + 2^{2} + 2^{2}} g_{i,l}^{(k-1)^{2}}$$

The mayben strict that could be the plant to the read period at lanches. The which interests that example on the same to extend to all the  $(0-2^{\circ})^{\circ}$  is profit as the same 1/2, 5/2.

$$\begin{split} & \chi_{0} = \frac{2}{3} \left[ f(x) \sin^{2} \frac{\partial u}{\partial x} + \frac{2}{3} \int_{0}^{\pi} u dx - \frac{\partial u}{\partial x} dx \right] \\ & = \frac{2}{3} \left[ \frac{\partial u}{\partial x} \cos^{2} \frac{\partial u}{\partial x} + \frac{1}{3} \int_{0}^{\pi} u dx - \frac{\partial u}{\partial x} dx \right] \\ & = \frac{2}{3} \left[ \frac{\partial u}{\partial x} \cos^{2} \frac{\partial u}{\partial x} + \frac{2}{3} \int_{0}^{\pi} u dx - \frac{\partial u}{\partial x} dx \right] \\ & = \frac{2}{3} \int_{0}^{\pi} \frac{-2\pi}{3\pi \pi} \cos^{2} u dx - \left[ \frac{\partial u}{\partial x} - \frac{\partial u}{\partial x} - \frac{\partial u}{\partial x} - \frac{\partial u}{\partial x} \right] \\ & = \frac{2}{3} \int_{0}^{\pi} \frac{-2\pi}{3\pi \pi} \cos^{2} u dx - \left[ \frac{\partial u}{\partial x} - \frac{\partial u}{\partial x} - \frac{\partial u}{\partial x} - \frac{\partial u}{\partial x} - \frac{\partial u}{\partial x} \right] \\ & = \frac{2}{3} \int_{0}^{\pi} \frac{-2\pi}{3\pi \pi} \cos^{2} u dx - \left[ \frac{\partial u}{\partial x} - \frac{\partial u}{\partial x} \right] \\ & = \frac{2}{3} \int_{0}^{\pi} \frac{-2\pi}{3\pi \pi} \cos^{2} u dx - \frac{\partial u}{\partial x} - \frac{\partial$$

$$=\frac{\frac{10}{28^{3}}}{\frac{10}{20}}\frac{(3+3+1)}{(5+3+3)}=\frac{1-\frac{6}{3}}{\frac{10}{20}}$$

From eaching condise lies by odd setting to brack in  $P_{i,j} = z + 2 + 1 + 2 + 3 + 1 + 3 = 9 \times 3$ 

$$f(z) = \frac{-2}{\pi} \sum_{i=1}^{n} \frac{(-i)^{i-1}}{z^{i}} \exp \frac{\sigma_{i-1}}{2}$$

The solit mers p(t) constant  $\Theta_t$  be to include sundicast t and q(t)  $C_t$  are either constant  $\Phi_t$  q(t) and

shows the equation of the holds appear  $|\Omega_0=\delta_1-\frac{1-\alpha^{1/4}}{\alpha}|(10)|=\frac{1}{440}$  or only an isomorphism  $\times$ 

$$S(x,y) = \frac{10}{4\pi} \sum_{i=1}^{\infty} \frac{(x-y)^{2}}{x} e^{-\frac{(x-y)^{2}}{2}} e^{-\frac{(x-y)^{2}}{2}} \exp \frac{\eta_{AB}}{2}$$

## The Steady-State Solution

The electric  $oldsymbol{ ilde{q}}_{ij}$  and  $oldsymbol{ ilde{q}}_{ij}$ Latis independently (main be-present the equilibrium of perstance) black on, which we can the result etaIf all  $i \neq a$  function  $i \in a$  enc. We all  $a_i$  to half j be from so the juntagram of Figure  $a_i = b^i$  on the  $a_i \in a_j$ supplifying the managed and engineering weight

Divide optionally gradient integral two constructions well all to the interest in the process of a dog as وجرو والملاكما

$$\lambda(x) = Ax + B$$

The provided by something which for all mentions of  $x(x,t) = x(x) + x_0 x(x) + x(x) + x(x) + x_0 x$  depending a xContinues to deal Jugg

$$\begin{split} & V(t) = (t_1 + A) \Gamma(t_1) + \omega = \lambda; & \qquad \omega = \frac{\omega}{T_1} \\ & V(t_1) = V_2 = \lambda V + K = M_2 + K, & \qquad \omega = V_3 + T_4 K. \end{split}$$

There are

$$f_{11} = \overline{f}_1 + \overline{f}_1 = \overline{f}$$

Further each to could standy stand with one of that lead condumn the cuylion

## ILLUSTRATIVE EXAMPLES

#### Example.

Find  $\mathbf{r}(x)$ ,  $\mathbf{g}(\mathbf{w})$  Heath obtained and reduce  $\mathbf{r}_{\mathbf{w}}$  and  $\mathbf{r}_{\mathbf{w}}$ 

- 1.  $a(0, i) = aa + ij(s, i) \pm a$   $\frac{a}{2}(1 + ia)^2 i i 4ij(s, i) = a + ij, ii, i) = 2a$

#### **Տուսն**ըը։

We see both  $\eta$  for a function of the form  $\eta(\cdot)$  than is discretely also given by a constant  $\eta_0$ do be restricted in (i.e., we we have easy considered for the weight to bound  $\phi = d\phi + b\theta$ , and  $\mathbb{P}(T_{n}(f) = \mathbb{C}(f) = 0, \exists f \in \mathcal{H}.$ 

$$\begin{aligned} \gamma(Q) = \langle (1) - A(0) + 2 \rangle = Q & \text{if } \gamma(Q) \\ \gamma'(Q) = Q = Q & \text{if } \alpha = Q \end{aligned}$$

 $100.4649 \cdot 301 + 314.59 = 55$ 

The two boundary conditions has become from the  $\exp \psi(0)$  . At  $\psi(0) = \psi$  can  $\psi(0) > 0$  , and  $-\Delta(\lambda_1) - \Delta e^{i \phi(\lambda)} = \psi = (\Delta t(0+i\Phi) + \eta) A = -4A + B$ 

#### 8.4 Laplace Equation for a Rectangular Region

Consider a leggangular interruit le control d'un passe tre un faction, con le podes de control cocce; este poyent d'un antique d'une tour au réponée d'hessa avrymografiut leur à reserve est disposit à fête. The promitie numero et eny point de, yi coloin des reclanquier legion leve, et le present est by the language volt en minero.

(2 dim Labour equation)  $|\psi_i\rangle$  (  $|\psi_i\rangle$  )  $|\psi_i\rangle$  (  $|\psi_i\rangle$  )  $|\psi_i\rangle$  (  $|\psi_i\rangle$  )  $|\psi_i\rangle$  (  $|\psi_i\rangle$  ) and  $|\psi_i\rangle$  (  $|\psi_i\rangle$  )  $|\psi_i\rangle$  (  $|\psi_i\rangle$  (  $|\psi_i\rangle$  )  $|\psi_i\rangle$  (  $|\psi_i\rangle$  )  $|\psi_i\rangle$  (  $|\psi_i\rangle$  (  $|\psi_i\rangle$  )  $|\psi_i\rangle$  (  $|\psi_i\rangle$  (  $|\psi_i\rangle$  )  $|\psi_i\rangle$  (  $|\psi_i\rangle$ 

The separation of serial ness notice is similarly file of the enterior is shown by the social fitting depends on the proposition of  $y_i = X(y_i)$  . It may have a proposition of the  $X(y_i)$  and  $X(y_i)$  are some analysis of  $X(y_i)$  and  $X(y_i)$  and  $X(y_i)$  are some analysis of  $X(y_i)$  and  $X(y_i)$  and  $X(y_i)$  and  $X(y_i)$  are some analysis of  $X(y_i)$  and  $X(y_i)$  are some analysis of  $X(y_i)$  and  $X(y_i)$  and

$$\frac{2000}{2000} = \frac{100}{2000} = \frac{100}{2000}$$

BMITES both sides かんえき

lyckung, her dependent varietyes are separated withe tegra. Hat we call it says for a forecast about the filter than the same and the control of the same and the

$$\frac{x^{2}}{y} = \frac{y^{2}}{y} = \lambda$$

$$\frac{x^{2}}{y} = \lambda \qquad \dots \qquad x^{n-1}y \qquad = -2x \cdot \lambda y = 0$$

$$\frac{x^{n-1}}{y} = 1 \qquad \qquad y^{n-1}y \qquad = -y \cdot \lambda y = 0$$

The doubtday conductions also separate:

First be form to under court bias u(0, y) = 0 yields

The nomerop is to solve the agree of the problem. Not contact here is continued until difference flow elly that this time agree of the grown sectors are against a continued on the choice of contact the problem.

$$f'(-x) = 0,$$
  $f(0) = 0,$   $f'(0) = 0.$ 

If years in each for the less that the construction is a point in a transition of a forther in the construction of the second construction of the footeness that the construction of the second construction of t

$$S = B^2 + \frac{a^{2-2}}{a^2} \qquad \quad a_1 = S \cdot S_1$$

They are expending a generation are

$$\gamma_{ij} = 2 \, n \frac{r_i r_i \sigma_i}{4} \,, \qquad \qquad \mathcal{D} = 1 \cdot 2 \, \omega$$

On the Hilling four proportion is the full line the equation of a Ab hazarra equation regards as for a formula  $y \in \mathbb{R}^n$  and  $y \in \mathbb{R}^n$ 

$$\chi^{*} = \frac{\log \pi}{2} (\chi^{*} = 0) \qquad \text{ Sign} = 0$$

is characteristic to provide a  $e^2 = \frac{a^2 \pi^2}{\pi^2}$  with respect region  $e^2 = \frac{2\pi}{\pi}$ 

tendo, the general structure for the equation on the

$$X = O(c^{\frac{1}{2}} \cdot \log c^{\frac{1}{2}})$$

ho togra bounds you while good

$$\mathbb{K}(\theta) = \mathbb{C} - \mathbb{C} \quad \Rightarrow \quad \mathcal{E}_{\theta} = \mathcal{D}_{\theta}$$

 $\mathbb{R}$  ensities for  $t \neq 1, 2, 3$ .

$$\hat{V}_{p} = C_{p} \left[ \sqrt{\frac{2}{p}} x - 2 \frac{\pi m_{p}^{2}}{p} \right]$$

account of the hyllender bala she function.

$$\sin \theta = \frac{9^9 - 9^{10}}{3},$$

The CPP Curve  $\mu$  essents a consensation tale wat all  $\gamma$  is subsets  $\phi$ 

$$Z_{s} = X_{s} \le c \cdot c \frac{n\pi \times n}{n} = n + 1, 2, 3, \dots$$

A count diorid satisfy the relation  $M_{\rm s} = \pm 2 f_{\rm s}$ 

Our birthold disput ont of the least  $\mathbf{w}_1 \mapsto_{\mathbf{v}} \mathbf{w}_1$  where the second solutions that settings the white  $\mathbf{w}_1$  is a transfer of solutions that second first the  $\mathbf{w}_2$  is a factor  $\mathbf{w}_3$ 

$$\begin{split} & \partial_t p \lambda_t (\mathbf{r}) = \| \mathbf{f}_t(\mathbf{p}) \mathbf{f}_t(\mathbf{r}) - \partial_t \mathbf{f}_t(\mathbf{r}) \frac{\partial \mathbf{g} \lambda_t}{\partial t} \delta \eta \frac{\partial \mathbf{g} \lambda_t}{\partial t} - \mathcal{D} = 1, \, 2, \, \psi \quad , \\ & - \mathcal{L}_{t,t}(\mathbf{f}_t) = \sum_{k=1}^{\infty} \mathcal{L}_{t,t}(\mathbf{g}_t) + \frac{\partial_t \lambda_t}{\partial t} \mathbf{g}_t(\mathbf{f}_t) \frac{\partial_t \lambda_t}{\partial t} \end{split}$$

in an automotive process is specific to the seneration beginning in

$$P_{p,h}(t) = 0$$
 and  $P_{p,h}(t) = 0$ ,  $P_{p,h}$ 

To find the continuous collaboration with the medium, decreasing condition, namely, and  $x(t) = \xi(y)$ ,

$$c(x,y) = -\sum_{i=1}^{n} d_{ij} \exp i \frac{2i \pi i}{2i} e^{-i t} \frac{\pi i}{n} + dy,$$

First everywheath code of this expension is also here the summan above so that codes we are for the life value of t = 0, or found t = 0, and the code of above relative stays that the termination probability t = 0, in the expension and the condition t(t) in the expension and the condition t(t) in the expension are the conditional probability of the probability of the conditional probability

$$\kappa_{\mu\nu}(i) = \frac{2\pi}{n} = \frac{2\pi}{2\pi} \frac{1}{2} \widetilde{\eta}_{\mu}(i) \eta^{\nu} \widetilde{\eta}_{\mu}(i) . \label{eq:kappa}$$

Therefore,

$$K_{ij} = \frac{\partial q_{ij}}{\partial t} + \frac{2}{2} \frac{\frac{1}{2}}{\partial t} \frac{\partial p_{ij}}{\partial t} \frac{\partial p_{ij}}{\partial t} \partial p_{ij}^{*} \partial p_{ij}^{*} \partial p_{ij}^{*}$$



## Previous CATE and ESE Questions

Did. The souter of helps in or brome causing

$$\frac{\partial x^{\prime}}{\partial t} = \left[ \frac{\partial^2 y}{\partial x^2} \right]_{x,y} + \ln y \log t - 1$$

- $(\phi_{i}, \phi_{i}, \phi_{i}, \phi_{i}) \in (0, e^{\frac{1}{2} i \phi_{i}}) \cap (\phi_{i}, \phi_{i}, \phi_{i}, \phi_{i})$
- $(x) = \left( q^{(1)} \otimes_{\mathcal{A}_{k}} (x^{(1)} \cdot x) \otimes_{\mathcal{A}_{k}} (x^{(1)} \cdot x) \right)$
- $\langle \mathcal{C}_{i}^{(1)} \cap \mathcal{C}_{i}^{(2)} \cap \mathcal{C}_{i}^{(2)} \rangle \langle \mathcal{C}_{i} \rangle \langle \mathcal{C}_{i}^{(2)} \cap \mathcal{C}_{i}^{(2)} \rangle = \langle \mathcal{C}_{i}^{(2)} \cap \mathcal{C}_{i}^{(2)} \rangle \langle \mathcal{$
- with this form that the space of the space ICH, 2018 - Markin
- Q 2. The greed on tability along equation

$$\frac{g^2 C}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} \rightarrow C \frac{\partial^2 C}{\partial x \partial y} + C \frac{\partial C}{\partial x} + \frac{\partial C}{\partial y} = 10 \cdot 9$$

- ψή μοταφοία.
- (A) high entropic
- $P^{\frac{n}{2}} \cap I = 0 \text{ Proof}$

GF | 2016 : 1 Mark

 ${\mathfrak Q}({\mathsf U})$  . Consider the following completely  ${\mathsf H}^{\mathsf{L}}_{\mathsf{u}}$  is tight obtained. ata (a) with the constant of a 1.

$$\frac{dn!}{dn!} = \frac{dn!}{dn!} = 3$$

kia ulian bili bis yayan ay ta

- (5)  $|9(x,y)| = \delta(x + xyy)(5) |xy y| = \delta_{yx} xyy$
- $(0) \cdot 24 \times p_i^2 = \delta(2x + p_i)(2) \cdot 2p_i \times p_i^2 = 2p_i p_i + p_i^2$

[ME, GATF-2017; 1 N 2/k]

 $\mathbf{QA}$  . Contain with the contains  $\mathbf{z}(\mathbf{z},\mathbf{z},\mathbf{z})$  (Section ).  $f(\omega, |\mathcal{F}_{-1}) = (\mathcal{F}_{-1} + |\mathcal{F}_{-1} - 2\omega_{0}) \partial_{t} f = \mathcal{F}_{0}^{2}$ The partial control to of the function with 0.8393.4.4.2.2.390 people (3.5) = 1.703

 $[50.3A \pm 2017, 1M_{80}]$ 

Q 5 - Op social material gravity different a colorial in

$$2\frac{3^2\phi}{3\pi^2}+4\frac{3^2\phi}{3\pi\Omega}+7\frac{\pi^2\omega}{4\pi^2}+2\omega +0)$$

но При начинась to be с acerta в ях дугарода. тээ ханны 1,50 онуу, эх <u>— .</u>..

[CL, GAIE-9017 - 1 Mark]

5/8. The wildoor of the following cyclia following

equation 
$$\frac{d^2 c}{2 \sqrt{2}} = 3 \frac{d^2 c}{2 a^2} + 8$$

- $\begin{array}{lll} \langle s, -s m \rangle \langle \delta s, -s m \rangle & & \langle s m \rangle \langle s m s \rangle^{\alpha} \\ \langle \theta \rangle & -s m \langle \delta s, -s m \rangle & & \langle s m \rangle \langle \delta s, -s m \rangle^{\alpha} \\ \end{array}$

EGE Prolime 2017

#### Appendix Second Order Linear Partial Differential Equations

- (6 3
- ₫ ў **3.**

#### Explanations . Securit Order Linear Partial Differential Equations

#### 1. (a)

The PDF 
$$\frac{\partial S}{\partial t} = a \frac{\partial^2 a}{\partial t^2}$$
 ( )

XX (Illion eq. ( ) is

$$\phi(x,y) = (\mu_1 \cos x_1 + \cos x_1) \lambda e^{-\frac{1}{\mu_1 + \mu_2}}$$

Did - Siz -

$$= - (1 - \frac{1}{2} - \frac{1}{2\alpha})^2$$

Eliming value of joining (ii)

$$\cos s \cdot y = \left[ A \cos \frac{13}{4 \pi \sigma} s \cdot b \sin \frac{1}{2} s \right] + C s^{2g}$$

$$= O(t + 2 i \frac{J_{\pm}^{2}}{2} + \dots J_{\pm}^{2}) \left[ + 2 i \frac{J_{\pm}^{2}}{2} + \dots J_{\pm}^{2} \right] = 3.$$

$$\cup \left[ Gd^{2} \left[ A\frac{\partial}{\partial z} \left[ \frac{A-B}{2} \right] \right] \otimes \frac{\sqrt{|z|} \left[ z_{1} - b \right]}{\left[ -z^{2} \right]} \right]$$

$$=\frac{(k_1-k_2)^2}{(k_1-k_2)^2} \frac{(k_1-k_2)^2}{(k_1-k_2)^2}$$

#### 2. [2)

Company of any series instead with the general In an electric cross contact of Ferencia Hay 2004. where the set of  $S = S_1 \cap S = 1 + \frac{1}{2} S_1 + \frac{1}{2} S_2 + \frac{1}{2} S_2 + \frac{1}{2} S_3 + \frac{1}{2} S_4 + \frac{1}{2}$ .. PDL of vooree at

ith. Э.

$$S=200-37^{\circ}$$

$$\frac{\partial u}{\partial x} = \sigma(x - xy)(1)$$

$$\begin{aligned} \frac{\partial x^{i}}{\partial y^{i}} &= F(\mathbf{x} + \gamma_{i}\mathbf{y})(-\mathbf{x}) \\ &= -\gamma_{i} F(\mathbf{x} + \gamma_{i}\mathbf{y}) = -\gamma_{i}\frac{\partial \mathbf{x}}{\partial x} \end{aligned}$$

$$|x| = -\frac{\partial u}{\partial x} + x \frac{\partial u}{\partial x} = 0.$$

4. Set 
$$\frac{d^2 \cdot (x \cdot x_1 + (x^2 + 2x^2) \cdot (x^2 + 2x^2))}{dx} = (x^2 + y^2 + 2x^2) \cdot (x^2 + 2x^2) \cdot (2x^2 + 2x$$

Green that the parties of the entire level in the aa aab M

ñ. [0]

$$\begin{aligned} & \mathcal{A} = \mathbf{z} + (\beta x - b) \\ & \mathbf{y} = (\beta x) \mathcal{A}(x + b) \\ & \mathbf{y}_0 = (\beta x) + (2x - b) \\ & \mathbf{y}_0 = (0x \mathbf{x})(\beta x + b) \\ & \mathbf{y}_0 = (-2x \mathbf{x})(\beta x + b) \\ & \mathbf{y}_0 = -(-2x \mathbf{x})(\beta x - b) \mathbf{x} \\ & + 6x^2(\beta) = \mathbf{x} \end{aligned}$$

EHHH