NSGHS TRIAL ASC 2010 XI SOLUTIONS.

2 vestion 1 (a) P(d) = 214 - 223 + a24 b (21-1) Partor : P(D=1-2+a+b=0 outleade : [a+b=1] -0 : P(-1) = 1+2-ab=0 [-a+b=-3] -2) 00 2b = -2 : b=-1, a=2 22 7,2 (041) (01-1) > 2 (01-1), 01+1 2 (21 4)2 < (21 41) (21 4) 2(0,1)2-(0,1)(0,-1) <0 (D1-1)[201-2-11-1] SO $(01-1)(\alpha-3)\leq 0$: 1 < oL < 3 Since ol + 1 (c) BIOLOGIST (i) $\frac{9!}{5!2!} = 90720$ (ii, [II] BOLOGST P(I'stade) = 8! /9! /21.21. $=\frac{8!.\times 2!}{9!}=\frac{2}{9}$

(d) tan 450= m-2 11+2m = m-21 1+2m = m-2 or 1+2m= -(m=2) M = -3 3m = 1 $-: m = -3, \frac{1}{2}$ oc (oct/2) = 82 al+1201 -6450 Or +16) (or -4)=0 : a=4[x70] Question 2 (a. 5 da = 4 5 (1+31) = 4. 1 ton (1)+c = 1 ton-12x+0 (b) let roots &, B, &-B Sum of 10013 2+ p+ x-p = 4 1251 2=2 product of rods dp (d-p) = -13 LB(L-B) = -15 B(1-2B) =-15 2 p2 - B - 15 = 0 $(2\beta + 5)(\beta - 3) = 0$ B= -5, 3

cods 1, 5, 6-5 > 6, 5,3

上, +3, 是-3 7 上, 3, -1

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vestion	2 (Hd)	Question 3
165	(0,1) P(2p,p2) k:1=1:2	(a) Esterior angle of cyclic quad (LCDE) = opporte interier angle (LABC)
0	1P+2+0 P2+2	= opporte interier angle (<abc)< th=""></abc)<>
R	2+1 7 2+1) 16+3+0 6,+5	(iii) < AQC (c c c c c c c c c c c c c c c c c c
: R	$\left(\frac{2P}{3},\frac{p^{2}+L}{3}\right)$	(iii) < ABC : < BAC (equal ongles sorule DACB) < BDC : < BAC (ongles in same segment)
	3	·: < BDC = < LABC
(ji)	: d= 2P : p= 30L	but < CDE = < Age Com (i')
		· ; < BDC S< CDE
****	ης <u>β</u> 12	OC bisiels <bde< td=""></bde<>
	$3y = (3x)^2 + 2$	(b) lim Jin2x = 3 /1m (Sin2x) = 3
	3y-25 902	(b) $\lim_{x \to 0} \frac{5 \ln 2x}{3} = \frac{2}{3} \frac{1 \ln x}{1 + 1} = \frac{2}{3}$ $= \frac{2}{3} \times 1 = \frac{2}{3}$
	9a2= 4(3y-2) 9a2= 12y -8	(E) _ = 5 n2 e221 e21 bc
#100 PM	and the second s	let u = e 1 -1
(d)	5108 1th (086 1th	DI = 0 UZ eº -1 = 0
		a = 1 - 1 = 2 - 1 = 1
	25n0 + 4c00 = 3	de ex
	= (2 t) + 4 (1 - t) = 3	: du : en da
TO BE THE STREET OF THE STREET	4++4-4+ = 3+3+2	it = [m2 est Jest] est da
	7t2 - 4t -1=0	• •
	t= 4± 516+28 = 4± 544	= \(\int \) \(\tau \cdot \) \(\tau \cdot \)
	14 - 14	$=\int_{0}^{\infty}\left(u^{2}+u^{2}\right)du$
: O	= 0.759, -0.188 = 0.64 2.955	$= \int_{\frac{\pi}{2}}^{2} u^{\frac{\pi}{2}} + \frac{2}{3} u^{\frac{3}{2}} \int_{0}^{1}$
9	= 1.30, 5.91	- [5 U2 + 3 DO
		= = = = = = = = = = = = = = = = = = = =
		- 16
		= 16

Question 3 : coefficient x : (16) (-3) d)(1) 1+cos 2x=1 = -1 061 424 CB251=0 コルニ生工 (b) (1, N: A+Be-0.4+ いいまま t=0 N=500 : 500 = A+B (ii) V=TI (1+ cos 201) de - 54 lde 1-700 N=100 but N=10 - A = 100 = 17 ((1+205la+ cos220 = 1) dx ∴ B = 400 (ii) 110 = 100 + 400 € 0.4t = 2 TT (1 + co 4x) de 1 = e - 0.4t = 271 Sin2a+2 (21+45in4a) -0.4/= In to = ITE SINT + K THISINT 1= \frac{\lambda 40}{0.4} $=2\pi\left[\frac{1}{2\pi}\right]$ = 9.22 415 = 111 months. = 27[ET+1] $|\geq|-\kappa\geq|-|(i)|$ = (= 1 + 2 1) until 0 < 2 < 2 (ii) Juestian 4 (OL - OIL) 16 Q_{j} Th= (16) (01) (-3) 11 = (16) 216-k (-3) k or -4k = (18-3/c oc 16-3/c (Ti) y=2005 (on-1) x = cos(y)+1 couffer: 16-1/21 .: A= 52 (cos(y)+1) dy : 3k= 15 = [25m(2) +y] 415 - (25in + 7711) - (25in0 to) = 27 unite

Denominator > numerator : 421 Question 5 s test n=1 : 02421 LHS=2. RHS=2+12-1=2 : true for nel come true for nik / 15 2-15+9+... 2k-1 pla-1= 2k+ 1/2-1 : 024<1 to show true for nikil 10 7 +5+ ··· + [214 2(k+1)+1] = 2 lept (k+1)-1 (1V, y) 3:0 45 THA:5 Naw LHS= Sk+ Tk+1 Johns .. $= 2^{k} + k^{2} - k + 2 + 2(k+1) - 1$ = 2.2k+k2-1+2k+2-1 = 2 1/1 + 1/2+2/2 = 1 k+1 + (lel+2k+1) -1 = 2 (x+1 + (1x+T) -1 Twe For nok+1 : Since true for nel and true for n-lett den twe for nik, true For all 117/ by induction) (1) y= FOLT4 21 = 1 + 401 = ey dy e31(e344) - e3(e31) ey (1-31) = 401 ey-, 40L = 400/4 472 y = In (401) # 0 as 4ex 7.0 ·: No stationary prints (ii)y=f(x) continuous and increasing. : always inverse

(ii)

for) drags partie : 470

Question 6

(6n-1) I

工工工 $\binom{n}{0} + \binom{n}{1} + \binom{n}{3} \binom{n}{1} + \cdots + \binom{n}{n} = \frac{2^{n_1} - 1}{n_2 \cdot 1}$ b) (1) h = tan45 bc = tan 60 = 13 $\frac{b}{b}$ $\therefore h^2 = 01^2 + \frac{h^2}{3} - 2 + 01 \cdot \frac{h}{2} \cdot (0530)$ $\binom{n}{0} + \binom{n}{1} + \binom{n}{2} + \cdots + \binom{n}{n} = \binom{n}{1} + \binom{n}{1} + \binom{n}{1} = \binom{n}{1} + \binom{n}{1} = \binom{n}{1} + \binom{n}{1} + \binom{n}{1} = \binom{n}{1} + \binom{n}{1} +$ h2= on + 12 - 2ah , 25 h= on+ h=-och $\binom{n}{0} + \binom{n}{1} + \binom{n}{2} + \binom{n}{1} + \binom{n}{n} = 2^{n} - 0$ 3 hr = 3012 + hr - 2xh $\frac{(n+1)(n+2)(n+1)(n+1)(n+1)(n+1)}{(n+1)(n+1)(n+1)(n+1)}$ 2h2+30h -3012=0 $\left\{ \begin{pmatrix} 1 \\ 1 \end{pmatrix} + \begin{pmatrix} 1 \\ 3 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \end{pmatrix} + \dots + \begin{pmatrix} 1 \\ 1 \end{pmatrix} = \frac{1}{2} \begin{pmatrix} 1 \\ 1 \end{pmatrix} + \frac{1}{2} \begin{pmatrix}$ $2(\frac{1}{2})^2 + 3(\frac{1}{2})^2 - 3 = 0$ h = -3 + 19 - 442 x 3 RHS= 7.27+27-220 +1 $= -3 \pm \sqrt{33}$ = 2(n-1)+1: 2 = 1333 sine both 70

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Questi		(iv) do do da
(a) (i,	< OBT = 90° (tengent 1 codius)	
	·· Cos O= of (right triengle)	at = 4 x 182-4
(ii)	L=18	Σ
	< AOB = T - CO5-1(2)	= 515
,	:: [=] (1 - (5 - (3))	
	BF2 = 02 -22 (pythagoros)	(b) (i) 2 mn+1 wom = (2).(7)
** *** .	:, BT=V211-4	$= \frac{n(n-1)}{n} \neq 0$
~ · · · · · · · · · · · · · · · · · · ·	the state of the s	= $n(a, l)$
	:.52 k+BT	= n2(n-1)
	= 2[T1-c15-(2) + Ja2+4	The second secon
		(ii) $n(5) = {2n \choose 3} = 2n(2n-1)(2n-2)$
(in)	$5 = 2\pi - 2\cos^{-1}(\frac{2}{5}) + \sqrt{21-4}$	31.
-		$= \frac{4n(2n-1)(n-1)}{2n-1}$
	5-0-2	250 (317-4)
	= -4	P(200 /word) = n2 (n-1) 4n(10-1)(n-1)
	= -4 312 VI-42 + Jon-4	n^{2} (200)
	7	2 4 T(2n-1)(n-1)
	= 4)\ \(\sqrt{31=4}\) + \(\sqrt{11=4}\)	$=\frac{3n}{4(2n-1)}=\frac{3n}{8n-4}$
	= -4 + 012	4(20-1) 80-4
	DL VOIL = G	(iii) least value for n=2
ds	= Nal -4	$p = P(2na) woman) = \frac{6}{16-4} = \frac{1}{2}$
		$6 n \Rightarrow 0 \xrightarrow{3n} \Rightarrow 3 \xrightarrow{3} 4 p \neq 1$

) (1)			7, 73, 74, 0, 7, 0, 7	1
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0 00	\mathcal{S}	o	क १ प्रमा १ प	(I's today) = 21/9!
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	= 0.64 2.955		(2p+5)(p-3)=0	<u>ð.</u>
$= \int_0^{\infty} \left(\pi + \pi \right) q \pi$	0	Ð	2 12 -15 =0	
	F= 4+7-16+20 = 4+7-174		B((-1B):-15	(ii, <u>II)</u> BOLOGST
((1 t) The du	1 + 1 + 1 = 1 = 0	:	1 2 (d-7) 87	10/ 10/ FO
The solution of the solution o	77 5 5 3 13 Kz		product of rods of (d-f) = -13	
du; e1 b	\[\tau_1\tau		1	LST9070 F 8 C
Con Con	() + 4 (1-1) = 3	· ·	1	
5.515.F			Sun of Cools of Btabas	1 1 C 2 2 3 Sna 2 t
5110 FU X 11110	14/2 598) ATT 5 AUG	(A)	(b) Let roots & B x-B	
10 8 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	The state of the s		ton tota	
31	8- At1 = 12	:	1 A 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	
12 J Par 1 22 1 000	1012 4(34-2)	:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3-(3, 1) - (3, 1) (3, 1)
	4		(a) 1+421 2-4-) (1+1) 1-1	(0-1) > 2 (0-1) , 01/1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	34-25 gr			(140)
(b) lim state = 2 time (son) = 7	. 34= (35) = 75			3-1 72
	\w\'\\		: 2=4[x70]	
. Dc byck <bde< th=""><th>4 c P1 +12</th><th></th><th>(or +18) (or -4) = 0</th><th>: 6=1, 0=2</th></bde<>	4 c P1 +12		(or +18) (or -4) = 0	: 6=1, 0=2
LL I		4	2+12 -6450	00 26:-2
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	17		&) 2 (0+12) = 82	
· Color color of same xalory	Ì		3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3	- h3
(m) - ABC ; < BAC (found on on SOTUM DACE)	17+19 Jt			
		1	2	() () () () () () () () () ()
= opport interior ongle (4ABC)	10+170 - 0+4-19 - O+6+94	\	13000	· 000 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -
(a) Estavier angle of cyclic quark (2 cos)	$(c)(i, S(o, 1)) P(2\rho, \rho^2) k: i = 1:2$	(4)65	3	<u>ανρών = οι = λου + ου + δ</u>
Austra 3	1-6H)	Question 2 6th	(d) tan 450; 1+ 1m	restion 1
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5 1X 5H 5C/V	2010	I SHOSN	TOTO!
			B
test no		(d 2(1) + (d) 4 1	(2) (-3)
	11 phice con 1		= -1 06/ 424
come true for not	671 109	りつ 1 mm m	(b) (1) N = A + B + 0.4+
1- 1/2/4/2 = 1-a/6/2 - 1- thest - 1	that i		KEO MESOO : 500 = A+B
to show true for notal	: 02451	(ii) V=# (1+ cos 2) b. 14	but
1- 7-15++ (216#) + 10+1] = 2 look (4+15-1	7.		: A = 100
	(1V) 9	=)T ((+2cs)a+ color) de	· B = 400
aw XHS = 3k+1k+1 + 2+2(k+1) -1	19th	11-11-11-11-11-11-11-11-11-11-11-11-11-	(ii. 110 / 120 + 1,00 o
= 2.24 12-1+26 -1	manufacture and the second of		1,00.4
= 2 441 4 1424		5072 + 1 (or + 4 2 m/a)) +	+0
= 1 k4 + (1+1/61) -1		1 1	10.4% 10 40
Two For nock+1		1 + 12 - 12 - 1	= 9.72 yrs
I sand time for	ـــــا الاحتـــــــــــــــــــــــــــــــــــ		= 111 marths
	(V) 2 5 P (V)	97	
true for all 197/1 by industria	5 4 77	一年 一年 1	(1) -1 \ \ \ \ -1 \ \ \ \ -1 \ \ \ \ \ \ \
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(4+16 <u>2</u>)	ey (1-30) ≤ for	(01 - 01) "	The second secon
40%		$\mathcal{T}_{k} \stackrel{\text{d}}{=} \binom{16}{16} \binom{20}{16} \binom{20}{16} \binom{20}{16} \binom{20}{16}$	±
	$y \geq \ln\left(\frac{43}{3}\right)$	(16) 3 16-k (-3) k or 2/k	<u> </u>
7			(Ji) 9:21:65 (ov-1)
in) y=f(y) continuous and marcomy.			x= ca(2)+1
Cylinary Transfer		Complete : 3/2015	$A = \int_{a}^{m} (\cos(2) + 1) dy$
i) for dway purine : 470		125	- (2000) - (2000) - 12 (m/s)
			= (25in # +2H) - (23in0 to) = All chis

	1 Jaac N645	2010	NECHS TUAL	
Question 6		(0)	Bushan 7	
(a)	U	$_{0}\mathcal{E}\left(\frac{u}{u}\right)+\cdots+_{1}\mathcal{E}\left(\frac{u}{u}\right)+\mathcal{E}\left(\frac{u}{u}\right)+\left(\frac{u}{u}\right)=\frac{1}{u}\left(\frac{u}{u}\left(\frac{u}{u}\right)\right)$	(a) (i) < 087=90 (tanget 1 contis)	
Continues of the contin	:50=20T+F	14 (1) 14 - 12 (4) + 12 (4) 1 + 16 (4) 1 + 1	Ces B= 36 (right through)	1+
	6- 2 12 12 3	let aco :: cc 1	(ii) L=18	7 2 6 6 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1
(".	至(1749)	1. ((tx)) 1. 1. (n) 1. 1. (n) 1. 1. (n) 1. (:: [:] [[- (2 + (2 +)	
	がイツを上しいる。	let as	Both 2 cx -22 (pythogonos)	(1) (4) = mon 1+ mon (1) (d)
1	17 J	$\frac{1}{2}$	いめてこりついっか	τ ρ(n-l) χ n
		2 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	52 /c+ BT	1 (2)
(1)(9)	2000	$\frac{1}{1}\frac{1}\frac$	= 2[11-ces (2))+101+4	$(\omega) \ a(s) = (\frac{2n}{3}) = \frac{2n}{3} (2n-1)(2n-2)$
	_ i		7	= 40(1
	D. (330	(a) + (n) + {(n) + + (n) (n) = 1 m / - 10	\$ 20-2 - 1-(3-) -23-4 1-20 (34-4)	P(In lune)
	1, 2	let action original	21- V-42 7 20 -4	. /
		$\binom{(a)}{b} + \binom{n}{b} + \binom{n}{b} + \binom{n}{b} + \binom{n}{b} + \binom{n}{b} + \binom{n}{b} = \binom{n}{b} + \binom{n}{b}$	- -	
	$\frac{2}{2} \left(\frac{1}{2} + \frac{1}{2} \right) \frac{1}{2} - \frac{1}{2} \frac{1}{2} = 0$	$(-1)^{+}$	2-17 7 WF -4	= 4(201) = 30
(;;)	2 (4) + 3(4) -3 = 0	$\left\{ \begin{pmatrix} 1 \\ 1 \end{pmatrix} + \begin{pmatrix} \frac{1}{2} \begin{pmatrix} 1 \\ 1 \end{pmatrix} \end{pmatrix} + \begin{pmatrix} 1 \\ 1 \end{pmatrix} + \begin{pmatrix}$	٧]	(in) least value for n=1
	0 1 1 20 4 1 1 x 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R+15= 0.20+10-220+1	30 - 4 St4	ρ=: P(2run / Warum) = 16-4 = 1
•		$=\frac{1}{n+1}$		50 1 20 20 30 20 20 20 20 20 20 20 20 20 20 20 20 20
	of 11 ros sing bath 10			