UNIVERSITY OF BUEA

FACULTY OF ENGINEERING AND TECHNOLOGY

ENTRANCE EXAMINATION

October 2020

MATHEMATICS

Time: 3 Hours

Answer all Questions

Each Question has four suggested answers A, B, C, D. Select only one answer.

The parametric equations of a curve are	5. If $y = \ln(\frac{x+1}{2x})$, then $\frac{dy}{dx}$ is
$1-x=\tan\theta, y=\sec\theta.$	2x dx
The Cartesian equation of this curve is	2 <i>x</i>
$A x^2 - y^2 + 2x + 2 = 0$	$A \qquad \frac{2x}{1+x}$
$ B x^2 - y^2 + 2x - 2 = 0 $	
$x^2 - y^2 - 2x + 2 = 0$	
D $x + y^2 - 2x + 2 = 0$	$C \qquad \frac{1}{x+1} + \frac{1}{2x}$
	$D \qquad \frac{1}{x+1} - \frac{1}{2x}$
2. $n!+(n-1)!+(n-2)!=$	6. $\int_{1}^{2} 3e^{\ln x^{2}} dx =$
$A \qquad n^2(n-1)!$	J ₁ A 6 In2
$C \qquad n(n-2)!$	B $\frac{3}{\ln 4}$
D $n(n-1)!$	C 8
	(D) 7 V
3. The center of the circle with equation	7. The general solution of the differential
$x^2 + y^2 - x + \frac{1}{2}y - \frac{1}{4} = 0$ is	equation $(x-3)\frac{dy}{dx} = y$ is
2 4	ax
A $(\frac{1}{2}, \frac{1}{4})$	A $y = \frac{x^2}{2} - 3x + K$
B (2,-1)	
$C = (-\frac{1}{2}, -\frac{1}{4})$	$ \begin{array}{ccc} B & y = Ke^{x-3} \\ C & y=K(x-3) \end{array} $
2 4	D y=(x-3)+K
$(\frac{1}{2}, -\frac{1}{4})$	
4. The general solution of the equation	r-4
$\sin 2x = \frac{\sqrt{3}}{2}$ is	8. The statement $x-3>\frac{x-4}{x}$, $x\in R$ is
$\sin 2x = \frac{1}{2}$ is	equivalent to
$\frac{\pi}{6}[3n+(-1)^n]$	$A \qquad \frac{x^2 - 4x + 4}{r} > 0$
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$B \qquad \frac{\pi}{2}[6n+(-1)^n]$	
$C \qquad \frac{\pi}{6}[2n+(-1)^n]$	$C \qquad \frac{x^2 - 4x - 4}{x} > 0$
$\frac{1}{6}[2n+(-1)]$	$p x^2 - 2x - 4 > 0$
D $\frac{\pi}{3}[3n+(-1)^n]$	23 770
3	

10-11 - VIaj+16/2- 20-6

13. Two consecutive integers between which

1 and 2 2 and 3 \(\sqrt{3} \) 3 and 4

4 and 5

lies are

B

C

a root of the equation $x^3 + x - 16 = 10$

A sol tol men e	
9. Given that -2, K, 5 are three consecutive terms of an arithmetic progression, then the common difference is A 3/2 B 7/2 C 7 D 3	14. The vectors a and b are such that $ a = 3$, $ b = 5$, and $ab = -14$ then $ a-b = A$ B $\sqrt{62}$ C 44 D $\sqrt{44}$
10. The set of values of x for which the geometric series $\sum_{r=0}^{\infty} (x-1)^r$ is convergent is A $0 < x < 2$ B $-1 < x < 1$ C $-2 < x < 1$ D $0 \le x \le 2$ 11. Given that x is a periodic function of period 4 and that $f(x) = \begin{cases} x^2, \ 0 \le x < 2 \ ; \ x+2, \ 2 \le x < 4 \end{cases}$ then $f(9) = \begin{bmatrix} A & 1 \\ B & 81 \end{bmatrix}$	15. The sum of the first n terms of a series is given by $S_n = 5n^2 + 2n$. The n^{th} term of the series is $\frac{A}{B} = \frac{10n + 7}{10n - 3}$ $\frac{A}{C} = \frac{10n + 3}{10n - 7}$ $\frac{16}{A} = \frac{10n + 3}{10n - 7}$ $\frac{16}{A} = \frac{1}{3} < x < \frac{2}{3}$ $\frac{1}{3} < x < \frac{1}{3}$
C 11 D 7 12. The volume generated when the area of the finite region enclosed by the x-axis and the curve $y = x - x^2$ is rotated completely about the x-axis is	D $-\frac{3}{2} < x < \frac{3}{2}$ 17. The Cartesian equation of the curve with parametric equation
A $\pi \int_0^1 (x - x^2)^2 dx$ B $\pi \int_0^2 (x - x^2)^2 dx$ C $2\pi \int_{-1}^1 (x - x^2)^2 dx$ D $2\pi \int_0^1 (x - x^2)^2 dx$	A $y^2 = 4(x-4)$ B $y^2 = 4(x-1)$ C $y^2 = 4(x+4)$ D $y^2 = 4(1-x)$

15

 $18. \lim_{x \to \pi} \frac{\sin 2x}{\sin x} =$

В

C

D

-1

2

0

-2

			,
19. $1 + \frac{1}{2} + \frac{1}{2^1} + \frac{1}{2^1} + \frac{4}{2^4} =$		24 The equation $\cos x + \sqrt{3} \sin x = 1$ is equivalent to	
$\bigcirc \frac{31}{16} \checkmark$		$A \ 2\sin(x + \frac{\pi}{6}) = 1$	
16		$\beta 2\sin(x+\frac{\pi}{3})=1$	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		$C 2\cos(x-\frac{\pi}{6})=1$	
	12.	,	
D 2	14.	$(0) 2 \cos(x - \frac{\pi}{3}) = 1$ $2 \left[\cos x - \sin x + \sin x \sin x \right] = 1$	1/26 OTA 3
20. The asymptotes of the curve		25. Given that $\tan x = \frac{2}{3}$, $\tan 2x =$	
$y = \frac{(x-5)^2}{(x+5)(x-3)}$ are	à	A 12 to 12 - 251124	
(3.1.5)(3.4.5)	1	B 4 Cos x Sin	×
A x=3, x=-5, y=5		,	i= 13
8 x=-3, x=-5, y=-5		$C \frac{12}{13} \qquad \qquad 2 \cdot \frac{1}{13} = \frac{1}{12}$	= 17-75
C x=3, x=-5, y=1 D x=3, x=-5, y=-1		D 4/9	
D	1 4	13 13	
21. Given that $\begin{vmatrix} 1 & 2 & -2 \\ 2 & 1 & 3 \\ 3 & 2 & -4 \end{vmatrix} = d$, then	1000	26. The vector v, where $ v = 28$,	MIL
10 4 11		Is in the direction of the vector $2i + 3j - 6k$.	3
$\begin{vmatrix} 1 & 6 & -8 \\ 2 & 3 & 12 \\ 3 & 6 & -16 \end{vmatrix} = 3$		V =	
2 3 12 = 3 4		A 14i + 21j -42k	51n8 = 1
13 6 -161		B) 8i + 12j -24k	1/13
		C 26i + 25j -22k	3
B 72d C) 12d V		D $14i + \frac{28}{3}j - \frac{14}{3}k$	VI.
D 12d ²		- V	
22, When the polynomial function		27. The vector perpendicular to both	
$x^3 + 2x^2 + \beta x = 3$ is divided by $x = 2$ and $x + 1$, the remainders are the same. The value	1	3i-6j-4k and -3i+2j+2k is	
of the constant β is		A -41+6j+12 k	
A-5 949191 3 -447-6 3		B) - 4i +6j - 12k	
6 15 C 18 3 KM = - p-7		C 4i-6j-12k	
D -6 SP = -15 P		D - 2i + 3j + 6k	
23. α and β are the roots of a quadratic such that		28. Given that $f(x) = x^2 \ln(x-2)$	
$\alpha + \beta = 2$ and $\alpha\beta = \frac{1}{2}$. The value of $\alpha^2 + \beta^2$ is			72
A 2 1 1 (04) - 2 0		f'(3) = A 9 B 6 C 6ln5-9 f/3 = 0 +	2
B 3		B 6	
C 2		C 6ln5-9 + 3 = 0 + -	17
D 9		D -9	
•			380
	A LANGE TO SERVICE	K 1	

29. $\int_0^{\frac{\pi}{2}} \tan x dx =$ (A) $\frac{1}{2} \ln 2$	34. The range of values of x for which $ x-4 \le 2$ is
$B - \frac{1}{2} \ln 2 \qquad - \ln \cos 2 \log 2$	A $x \le 6$ B $x \le 2 \text{ or } x \ge 6$ C $2 \le x \le 6$
$C = \frac{1}{2} \ln 2 - 1$ $D = \frac{1}{2} \ln 2 - 1$	$D \qquad x \ge 2$
D - $\frac{1}{2}$ ln2 - 1 30. The curve $y = \frac{x^2}{x-1}$ cannot lie between y=0 and y=4. There is a local maximum of the curve at the point A (0,0) B (0,4) C (2, 4) D (2,0)	35. Which of the following statements is TRUE? A If $x^2 = y^2$, then $x = y$ B If $f(a)=0$ then $x+a$ is a factor of $f(x)$ C If $f(x)$ has a maximum value at $x=a$ then $f''(a)>0$ D Let $m,n \in Z$ be the set of integers. If m and n are both odd, then m+n is even
31. The solution of the differential equation $y \frac{dy}{dx} = 2x$, given that y=1 and x=1 is A $x^2 = y^2 - 2$ B $2x^2 = y^2 - 1$ C $x = 2y^2 - 1$ D $y^2 = 2x^2 - 1$	36. Given that $f(x) = \begin{vmatrix} x & x^2 & x^3 \\ 1 & 2x & 3x^2 \\ 0 & 2 & 6x \end{vmatrix}$, $f'(x) = \begin{bmatrix} A & 12 \\ B & 6x^2 \\ C & 6x \\ D & 42x^2 \end{bmatrix}$
32. The line segment PQ, where P is the point(7,7) and Q the point(-1,3), is the diameter of a circle. The equation of the circle is (x-7)(x+1)+(y-7)(y-3) = 0 (x-7)(x-1)+(y-7)(y-3) = 0	37. Given that x is a periodic function of period 4 and that $f(x) = \begin{cases} x^2, & 0 \le x < 2; & x + 2, & 2 \le x < 4 \end{cases}$ then f(9=
C (x+7)(x-1) + (y+7)(y+3) = 0 $D (x+7)(x+1) + (y-7)(y+3) = 0$	B 81 C 11 D 7
33. When $f(x) = 2x^3 + x^2 - 13x + 6$ is divided by $2x - 1$, the remainder is A 13 B 52 C $\frac{1}{2}$ D 0	38. Given that $\frac{x}{(3-x)(4-x)} \equiv \frac{p}{3-x} + \frac{q}{4-x}$ A p=3, q=4 B p=4, q=-3 C p=3. q=-4 D p=-3, q=-4

39. Two consecutive integers between which a	44. The vector equation of a straight line is
root of the equation $x^3 + x - 16 = 10$ lies are	r = 2k + j - 2k + e(3k + 2j + 6k)
A 1 and 2	The direction cosines of the line are
B 2 and 3	A [2, 1, -2]
C 3 and 4	8 [3, 2, 6]
D 4 and 5	
	$C \left[\frac{2}{3}, \frac{1}{3}, -\frac{2}{3} \right]$
	9 3 2 5
	\$7 7 7V
40. The range of real values of x for which $\frac{x-3}{x+3} \le$	45. Given the parametric equations
0 is	$z=2t+\sin 2t \text{ and } y=2-\cos 2t$
	Where s is the parameter,
A $x \le -2$ or $x \ge 3$	47 =
$(B) -2 < x \le 3$	A -tan f
C $x \le -3$ or $x \ge 2$	
$D -3 \le x \le 2$	8 sin 28
17.8	C cott
A 127	D sin scores
	46. Given that
1. When $(3-2x)^{\frac{1}{2}}$ is expanded in ascending	40. Given that
lowers of x, the range of values of x for which	$y = x \ln(3x^2)$, the value of $\frac{52}{6x}$ when $x = 1$ is
he expansion is valid is	A 3
$A - \frac{3}{2} < x < \frac{2}{3}$	8 m3
2 3	C 1+ln3
$B - \frac{2}{3} < x < \frac{3}{3}$	D 2 + frv 3
3 1 2	
$C - \frac{3}{2} < x < \frac{3}{2}$	
$C - \frac{1}{2} < x < \frac{1}{2}$	
2 2	
$D - \frac{2}{3} < x < \frac{2}{3}$	
42. The general solution of the equation	 The values of y corresponding to the values of are given in the table below.
$\sec(\theta + 30^{\circ}) = 2 \text{ is}$	x 6 9 12 15 18 21
θ=360° π ± 30° - 60°	
	y 0.3 0.8 1.4 2.1 3.0 4.3
θ=180° n ±30° -60°	Using the trapezoid rule, the approximate value
$-\theta = 360^{\circ} n \pm 60^{\circ} - 30^{\circ}$	for gdz is
θ=180° n ± 60° - 30°	
	A 9.6
	8 35.7
	C 28.9
	D 23.8
The sine of the acute angle between the	48. The gradient of the implicit function to the
ane π and the line l, where	curve $x^2 + y^2 = 13$ at the point(2,-3) is
x - y + z = 2 and	2
$\frac{x-2}{2} = \frac{y+1}{2} = \frac{z}{1}$ is	(A) -=
	3
1 / 3	8 3
1	2
	2
√15	
	$\begin{array}{ccc} 8 & \frac{3}{2} \\ c & \frac{2}{3} \end{array}$
$\frac{1}{\sqrt{15}}$ $\frac{1}{3\sqrt{3}}$ $\frac{1}{\sqrt{2}}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

	54. Given the complex number z, where
	$z = -\sqrt{3} - i$, the modulus-argument form for
49. sin 50" + sin 40" =	is
A √2 cos 5° B 2 cos 10° C 2 cos 5°	A $2(\cos\frac{\pi}{6} - i\sin\frac{\pi}{6})$
8 2 cos 10"	$B \qquad 2(\cos\frac{5\pi}{6} - i\sin\frac{5\pi}{6})$
	B 2(cos = 15th 6)
$0 \sqrt{2} \cos 10^{\circ}$	$C \qquad 2(\cos\frac{\pi}{6} + i\sin\frac{\pi}{6})$
<u>)</u>	$D \qquad 2(\cos\frac{5\pi}{6} - i\sin\frac{5\pi}{6})$
50. The value of the constant λ , for which the plane	55. Given that $\sqrt{3}\cos x = \cos(\frac{\pi}{6} - x)$, $\tan x = \cos(\frac{\pi}{6} - x)$
Ax - 3y + 4z = 5 and the line	5
r=i-2j-3k+r(2i+6j+3k) are parallel is	A √3
A 6	A $\sqrt{3}$ B $\frac{1}{\sqrt{3}}$ C 1 D $\frac{\sqrt{3}}{2}$
B 3	√3
C 4	, i
D 5	D $\frac{\sqrt{3}}{2}$
51. A point P divides the line segment joining the	$56. \int e^{3x} dx =$
points M(4, 1) and N(7, 7) internally in the	$A = \frac{1}{3x+1}e^{3x+1} + k$
ratio 2:1. The coordinates of P are A (5, 6)	
B (5, 5)	B $3e^{3x} + k$ C $e^{3x} + k$
B (5, 5) C (6, 3) D (6, 5)	C = e2+ k
D (6, 5)	$D = \frac{1}{3}e^{3x} + k$
52. If $4\log_{10} x - \log_{10} y = \log_{10} 13$ then	57. Given the parametric equations
A $x^4y = 13$	$x = 2t + \sin 2t$ and $y = 1 - \cos 2t$
$B \qquad 4x = 13y$	where t is a parameter, $\frac{dy}{dx} =$
$(C) \qquad x^4 = 13y$	A — tan t B cot t
$D = 4^x = 13y$	- sin 2r
0 4 -139	C 1+cos 2r
	sin 2t
	D 1+cos 2r
53. A first approximation to the real root of the equation	58. The curve $y = (x+2)^2$ has a minimum
$x^3 + x^2 - 5x - 1 = 0$ is 2. A second	point at
approximation to the root of the equation, using the Newton-Raphson's method, is	A (0, 4) B (4, 0)
	6 (4, 0) C (0, -2)
11	D (-2, 0)
B 23	
11	72.
c <u>19</u>	
11	
D 18	-
The state of the s	

	The second secon
The second state of the se	54. Given the complex number z, where
· · · · · · · · · · · · · · · · · · ·	$z = -\sqrt{3} - I$, the modulus-argument form for $z = -1$
49. sin 50" + sin 40" =	lis .
49. SIII 5U + SIII 4U =	
(A) $\sqrt{2} \cos 5''$ B $2 \cos 10''$ C $2 \cos 5''$	A $2(\cos\frac{\pi}{6} - i\sin\frac{\pi}{6})$
B 2 cos 10°	6 57
C 2 cos 5"	$B \qquad 2(\cos\frac{5\pi}{6} - i\sin\frac{5\pi}{6})$
$\sqrt{2}\cos 10^{\circ}$	CHARLES OF THE PARTY OF THE PAR
D VZ COSTO	$C \qquad 2(\cos\frac{\pi}{6} + i\sin\frac{\pi}{6})$
3 2	2(003 6 1 3 6
· · · · · · · · · · · · · · · · · · ·	$D \qquad 2(\cos\frac{5\pi}{6} - i\sin\frac{5\pi}{6})$
	π π
50. The value of the constant λ , for which the plane	55. Given that $\sqrt{3}\cos x = \cos(\frac{\pi}{6} - x)$, $\tan x = -\frac{\pi}{6}$
$\lambda x - 3y + 4z = 5$ and the line	-
F = I - 2J - 3k + I(2I + 6J + 3k) are parallel is	A √3
-	$ \begin{array}{ccc} A & \sqrt{3} \\ B & \frac{1}{\sqrt{3}} \\ C & 1 \\ D & \frac{\sqrt{3}}{2} \end{array} $
(A) 6	$B = \frac{1}{\sqrt{3}}$
B 3	c 1
C 4	73
D 5	$D = \frac{\sqrt{3}}{2}$
	2
to the transfer of the season to the season	$56. \int e^{3x} dx =$
51. A point P divides the line segment joining the	1 7
points M(4, 1) and N(7, 7) internally in the	$A \qquad \frac{1}{3x+1}e^{3x+1}+k$
ratio 2:1. The coordinates of P are	3x+1
A (5, 6)	B $3e^{3x} + k$ C $e^{3x} + k$
B (5, 5) C (6, 3)	$C = e^{1x} + k$
D (6, 5)	1
D (0, 5)	$D = \frac{1}{3}e^{3x} + k$
	57. Given the parametric equations
52. If $4\log_{10} x - \log_{10} y = \log_{10} 13$ then	$x = 2t + \sin 2t \text{ and } y = 1 - \cos 2t$
A $x^4y = 13$	
$B \qquad 4x = 13y$	where t is a parameter, $\frac{dy}{dx} =$
	A -tan/
$x^4 = 13y$	B cot t
$D \qquad 4'' = 13y$	$C = \frac{-\sin 2t}{2}$
	$1+\cos 2t$
2 1	sin 2 <i>t</i>
***	$\frac{1+\cos 2t}{1+\cos 2t}$
to the section of the equation	58. The curve $y = (x + 2)^2$ has a minimum
3. A first approximation to the real root of the equation	l .
$x^3 + x^2 - 5x - 1 = 0$ /s 2. A second	point at
approximation to the root of the equation, using the	A (0, 4)
ewton-Raphson's method, is	B (4, 0)
A 21	C (0, -2) D (-2, 0)
, II ,	(-2, 0)
B 23	1 10 11 12
11	ight. B
	1,25
$c = \frac{19}{11}$	7
$D = \frac{18}{11}$	

49,	sin	50^{g}	+	sin	40"	777
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- $\sqrt{2}\cos 5''$
- 2 cos 10"
- 2 005 5"
- 12 cos 10"

54. Given the complex number z, where $z = -\sqrt{3} - i$, the modulus-argument form for z

$$(\overline{A})$$
 $2(\cos\frac{\pi}{6} - i\sin\frac{\pi}{6})$

$$B \qquad 2(\cos\frac{5\pi}{6} - i\sin\frac{5\pi}{6})$$

$$C \qquad 2(\cos\frac{\pi}{6} + i\sin\frac{\pi}{6})$$

$$D \qquad 2(\cos\frac{5\pi}{6} - i\sin\frac{5\pi}{6})$$

50. The value of the constant λ , for which the plane Ax = 3y + 4z = 5 and the line

$$r = j = 2j - 3k + l(2i + 6j + 3k)$$
 are parallel is

- (A)

55. Given that $\sqrt{3}\cos x = \cos(\frac{\pi}{6} - x)$, $\tan x =$

- $\sqrt{3}$

51. A point P divides the line segment joining the points M(4, 1) and N(7, 7) internally in the ratio 2:1. The coordinates of P are

- (5, 6)

- 52. If $4 \log_{10} x \log_{10} y = \log_{10} 13$ then A 👂 x1y=13
 - B = 4x = 13y
 - $(\vec{C}) = x^4 = 13y$
 - D = 4' = 13y

$$56. \int e^{3x} dx =$$

- $\frac{1}{3x+1}e^{3x+1}+k$
- $3e^{3x} + k$
- $e^{3t} + k$ C
- $\frac{1}{2}e^{3x} + k$

57. Given the parametric equations $x = 2t + \sin 2t$ and $y = 1 - \cos 2t$

where t is a parameter, $\frac{dy}{dx} =$

- cot /
- sin 21 1+cos 2/
- sin 21 1+ cos 2/

53. A first approximation to the real root of the equation $x^{4} + x^{3} - 5x - 1 = 0$ is 2. A second

approximation to the root of the equation, using the Newton-Raphson's method, is

- 11
- 18 0

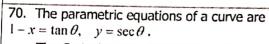
58. The curve $y = (x + 2)^2$ has a minimum point at

- (0, 4)(4, 0)
- (0, -2)(-2, 0)

59. The number of selections of 3 students from a class of 7 students for a party in which the class prefect must attend is A 1x *C ₃ B 1+ *C ₃ C 1x *C ₂ D 1+ *C ₂	64. Given that $\frac{d}{dx}(3x^3e^{2x}) = 3x^2(a+bx)e^{2x}$ A
60. Given that x-c is a factor of $f(x)$, where $f(x) = 2x^3 - cx^2 + +c(1-c)x - (6+c)$, the value of the constant c is A 2 or -3 B -2 or 3 C -2 or -3 D 2 or 3	65. The number of arrangements of the letters of the word MINIMUM is A $\frac{7!}{2!3!}$ B $7!x3!x2!$ C $7!$ D $\frac{5!}{2!3!}$
61. Given the differential equation $\cos x \frac{dy}{dx} = y \sin x, \text{ then}$ $A = y = \ln(\sec x) + K$ $B = \ln y = \ln(\sec x) + K$ $C = y = \sec x + K$ $D = \ln y = \sec x + K$	66. If $\frac{2}{x-2} + \frac{3}{x+1} = \frac{ax+b}{(x-2)(x+1)}$ then the values of the real constants a and b are respectively A 5, 4 B 5, -4 C -5, 4 D -5, -4
62. $\sum_{r=1}^{\infty} (r-1) = \frac{1}{2}n(n+1) - (n+1)$ $B = \frac{1}{2}n(n+1)(n+2) - n$ $C = \frac{1}{2}n(n+1)$ $D = \frac{1}{2}n(n+2) - (n+1)$	67. The roots of the quadratic equation $cx^2 - 3x - c = 0 \text{ are}$ $A \qquad \frac{3 \pm \sqrt{9 - 4c^2}}{2c}$ $B \qquad \frac{3 \pm \sqrt{9 + 4c}}{2c}$ $C \qquad \frac{3 \pm \sqrt{9 + 4c^2}}{2c}$ $D \qquad \frac{3 \pm \sqrt{9 - 4c}}{2c}$
63. $\lim_{x \to 0} \left(\frac{\sin 2x - \sin x}{\sin x} \right) =$ A 0 B -3 C 2 D 1	68. Given that $x \in R$ and that $x > 0$, the root of the equation $\log 2 + \log(2x^2 + 2x - 1) = 0$ is A $\frac{3}{2}$ B $\frac{2}{3}$ C $\frac{1}{4}$ D $\frac{1}{2}$

69. The di	iameters c	f two concentric circles are
10m and (5m. The a	rea of the region between
the to	vo circles	is
A	16π	
В	64π	
С	4π	
	the to	B 64π

_				
	74. If $y =$	$\ln(\frac{x+1}{2x})$, then	$\frac{dy}{dx}$ is	
	Α	$\frac{2x}{1+x}$		
	В	$\frac{1}{x+1} - \frac{1}{x}$		
	С	$\frac{1}{x+1} + \frac{1}{2x}$		
	D	$\frac{1}{1} - \frac{1}{2}$		



 9π

The Cartesian equation of this curve is

A
$$x^2 - y^2 + 2x + 2 = 0$$

B
$$x^2 - y^2 + 2x - 2 = 0$$

C
$$x^2 - y^2 - 2x + 2 = 0$$

D
$$x+y^2-2x+2=0$$

71. $n!+(n-1)!+(n-2)!=$

75.
$$\int_{1}^{2} 3e^{\ln x^{2}} dx = A$$

 $6 \ln 2$ $\frac{3}{\ln 4}$

$$x + y^2 - 2x + 2 = 0$$

A
$$n^2(n-1)!$$

D

(B)
$$n^2(n-2)!$$

$$C$$
 $n(n-2)!$

D
$$n(n-1)!$$

76. An Arithmetic Progression has first term In2 and common difference In4. The sum of the first 4 terms of the progression is

A 16 In4

B 16 In2

C 10 In4

D 8 ln2

 $f(x) = 3\cos$

e function S 5x is	1	77. The statement $x-3 > \frac{x-4}{x}$, $x \in R$ is
-		equivalent to

A
$$\frac{x^2 - 4x + 4}{x} > 0$$
B $x^2 - 4x + 4 > 0$
C $\frac{x^2 - 4x - 4}{x} > 0$

B
$$x^2 - 4x + 4 > 0$$

$$C = \frac{x^2 - 4x - 4}{x} > 0$$

$$\sin 2x = \frac{\sqrt{3}}{2} \text{ is}$$

$$\frac{\pi}{6}[3n+(-1)"]$$

$$B \qquad \frac{\pi}{2}[6n+(-1)'']$$

$$C \qquad \frac{\pi}{6}[2n+(-1)^n]$$

$$D \qquad \frac{\pi}{3}[3n+(-1)^n]$$

78. The argument of the complex number z, where
$$z = \frac{1+i}{1-i}$$
 is

$$A = \frac{\pi}{4}$$

A
$$\frac{\pi}{4}$$
B $\frac{\pi}{3}$
C $\frac{\pi}{2}$
D $\frac{\pi}{6}$

 The set of values of x for which the 	ne geometric
series $\sum (x-1)'$ is convergent is	

$$\begin{array}{ccc}
\frac{2x+7}{x^2+5x+6} & \text{are} \\
A & \frac{3}{x+2} - \frac{1}{x+3} \\
B & -\frac{3}{x+2} + \frac{1}{x+3} \\
C & -\frac{3}{x+2} - \frac{1}{x+3} \\
D & \frac{3}{x+2} + \frac{1}{x+3}
\end{array}$$