# KENDRIYA VIDYALAYA SANGTHAN TINSUKIA REGION

# PRE BOARD EXAMINATION-2024-25

### CLASS: XII

# SUBJECT: MATHEMATICS (041)

#### MARKING SCHEME (MS12MAT02PB24)

Q.	Question	Marks
No.	SECTION – A	
1	(d) 512	1
2	(c) $a_{ij} = a_{ji}$ for all i,j	1
3	(d) none of these	1
1	(b) $\pm 3$	1
5	$(d) (A + B)^{-1} = B^{-1} + A^{-1}$	1
6	(d) 1.5	1
7	(a) $\frac{x}{\sqrt{1+x^2}}$	1 1
8	(b) 12 π	1
9	(d) None of these	1
10	(c) $\tan x - \cot x + c$	1
11	(d) 0	1
12	(d) not defined	1
13	(c) x = yy	1
14	(d) $a = \frac{1}{ \lambda }$	1
15	(a) (2, 0, 0)	1
16	(b) (0.8)	1
17	(a) The half plane that contains the positive X-axis	1
18	(b) $P(A/B) = 1$	1
19	(c) A is true but R is false.	1
20	(a) Both A and R are true and R is the correct explanation of A.	1
	<u>SECTION – B</u>	
21	Given a correct example	1
	: R is not transitive.	1
22	Taking logarithm on both sides  Differentiating both sides with respect to x	1
	in the $y(y-x) = x + y(y-x)$	
180+	So $\frac{dy}{dx} = \frac{y(y-x\log y)}{x(x-y\log y)}$	
	$f(x)$ is continous at $x = \pi$	1
	$LHL = RHL = f(\pi)$	1
	-2	1
	$k = \frac{1}{\pi}$	1

$I = \int \frac{(x+1)(x+\log x)^2}{x} dx$ Let $x + \log x = t$ $(1 + \frac{1}{x}) dx = dt$ $I = \int t^2 dt$ $= \frac{1}{3} (x + \log x)^3 + C$ For correct diagram $y = \sqrt{4^2 - x^2}$ required area = $-4\pi$ square units.  OR  For correct diagram $y = \frac{4}{5} \sqrt{5^2 - x^2}$ required area = $5\pi$ square units.  25 a,b,c are unit vectors $d a  =  b  =  c  = 1$ $d + b + c =  0  \text{ (given)}$ $d(a + b + c) = 0$ $d(a + b + c)$	23	$\int (x+1)(x+\log x)^2$	
$ \begin{aligned} & (1 + \frac{1}{x})dx = dt \\ & I = \int t^2 dt \\ & = \frac{1}{3}(x + \log x)^3 + C \end{aligned} $ $ \begin{aligned} & 24 & \text{For correct diagram} \\ & y = \sqrt{4^2 - x^2}, \\ & \text{required area} = 4\pi \text{ square units.} \end{aligned} $ $ \begin{aligned} & OR \\ & \text{For correct diagram} \\ & y = \frac{4}{5}\sqrt{5^2 - x^2} \end{aligned} $ $ \begin{aligned} & y = \frac{4}{5}\sqrt{5^2 - x^2} \\ & y = \frac{1}{5}\sqrt{5^2 - x^2} \end{aligned} $ $ \begin{aligned} & y = \frac{4}{5}\sqrt{5^2 - x^2} \end{aligned} $ $ \begin{aligned} & y = \frac{4}{5}\sqrt{5^2 - x^2} \end{aligned} $ $ \begin{aligned} & y = \frac{4}{5}\sqrt{5^2 - x^2} \end{aligned} $ $ \end{aligned} $ $ \begin{aligned} & y = \frac{4}{5}\sqrt{5^2 - x^2} \end{aligned} $ $ \end{aligned} $ $ \end{aligned} $ $ \begin{aligned} & y = \frac{4}{5}\sqrt{5^2 - x^2} \end{aligned} $ $ \begin{vmatrix} z \\ b \\ c \end{vmatrix} = \frac{1}{5}e^{1}e^{1}e^{1} \end{aligned} $ $ \end{aligned} $ $ \end{aligned} $ $ \begin{vmatrix} z \\ b \\ c \end{vmatrix} = \frac{1}{5}e^{1}e^{1} \end{aligned} $ $ \end{aligned} \end{aligned} $ $ \end{aligned} $ $ \end{aligned} $ $ \end{aligned} $ $ \end{aligned} \end{aligned} \end{aligned} $ $ \end{aligned} \end{aligned} \end{aligned} \end{aligned} $ $ \end{aligned} \end{aligned}$			
$I = \int t^2 dt$ $= \frac{1}{3}(x + \log x)^3 + C$ 24 For correct diagram $y = \sqrt{4^2 - x^2},$ required area $-4\pi$ square units.  OR For correct diagram $y = \frac{4}{5}\sqrt{5^2 - x^2}$ required area $-5\pi$ square units.  1 Abe are unit vectors $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  a  -  c  -  c  \\ \cdot  a  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  c  -  c  -  c  \\ \cdot  a  -  c  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  c $		Let $x + \log x = t$	1/2
$I = \int t^2 dt$ $= \frac{1}{3}(x + \log x)^3 + C$ 24 For correct diagram $y = \sqrt{4^2 - x^2},$ required area $-4\pi$ square units.  OR For correct diagram $y = \frac{4}{5}\sqrt{5^2 - x^2}$ required area $-5\pi$ square units.  1 Abe are unit vectors $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  b  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  b  -  c  -  c  \\ \cdot  a  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  a  -  c  -  c  \\ \cdot  a  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  c  -  c  -  c  \\ \cdot  a  -  c  -  c  -  c  \end{vmatrix}$ $\begin{vmatrix} \cdot  a  -  c $		$(1+\frac{1}{-})dx=dt$	1
		$I = \int t^{2} dt$	1/4
$y = \sqrt{4^2 - x^2},$ required area =4 $x$ square units.  OR  For correct diagram $y = \frac{4}{5}\sqrt{5^2 - x^2}$ required area =5 $\pi$ square units.  1 3, b,c are unit vectors $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ (given) $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ (given) $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ (given) $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ (given) $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ (given) $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ (given) $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ (given) $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ (given) $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{0}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{0}  = 1$ $ \vec{a} + \vec{b} + \vec{c}  = \vec{0}$ $ \vec{a}  =  \vec{b}  =  \vec{0}  = 1$ $ \vec{a} + \vec{b} + \vec{b} + \vec{c} $		$=\frac{1}{3}(x+\log x)^3+C$	/2
$ \begin{array}{c} y = \sqrt{4^{2} - x^{2}}, \\ \text{required area} = 4\pi  \text{square units.} \\ \textbf{OR} \\ \text{For correct diagram} \\ y = \frac{4}{5}\sqrt{5^{2} - x^{2}} \\ \text{required area} = 5\pi  \text{square units.} \\ \textbf{25}  \text{a,b,c are unit vectors} \\ \therefore  \vec{d}  =  \vec{b}  -  \vec{c}  = 1 \\ \vec{d} + \vec{b} + \vec{c} = \vec{0}  (\text{given}) \\ \therefore (\vec{a} + \vec{b} + \vec{c})^{2} = 0 \\ \therefore  \vec{d} ^{2} +  \vec{b} ^{2} +  \vec{c} ^{2} + 2  (\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a}) = 0 \\ 1 + 1 + 1 + 2  (\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a}) = 0 \\ \frac{1}{2} + \frac{1}{$	24	For correct diagram	1/2
OR For correct diagram $y = \frac{4}{5}\sqrt{5^2 - x^2}$ $y = \frac{1}{2}\sqrt{2}\sqrt{2}$ $y = \frac{1}{3}\cos(\log x)$ $x = \frac{1}{3}\sin(\log x)$ $x = \frac{1}{3}\cos(\log x)$ $x = \frac{1}{3}$			1
$y = \frac{4}{5}\sqrt{5^2 - x^2}$ required area = 5 $\pi$ square units.  25 a,b,c are unit vectors		OR	
$y = \frac{1}{5}\sqrt{5^2 - x^2}$ required area = $5\pi$ square units.  25 a, b,c are unit vectors $  \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $  \vec{a}  =  \vec{b}  =  \vec{c}  = 1$ $  \vec{a}  + \vec{b}  + \vec{c}  = 0 \text{ (given)}$ $  \vec{a}  + \vec{b}  + \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b} + \vec{b}. \vec{c} + \vec{c}. \vec{a}) = 0$ $  \vec{a} ^2 +  \vec{b} ^2 +  \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b} + \vec{b}. \vec{c} + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b} + \vec{b}. \vec{c} + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b} + \vec{b}. \vec{c} + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b} + \vec{b}. \vec{c} + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b} + \vec{b}. \vec{c} + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b}  + \vec{b}. \vec{c} + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b}  + \vec{b}. \vec{c} + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b} ^2 + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b}  + \vec{b}. \vec{c} ^2 + \vec{c}. \vec{a}) = 0$ $  \vec{a}. \vec{b} ^2 + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b} ^2 + 2 \text{ (} \vec{b} ^2 + 2 \text{ )} \vec{a}) = 0$ $  \vec{a}. \vec{b} ^2 + \vec{b}. \vec{c} ^2 + 2 \text{ (} \vec{a}. \vec{b} ^2 + 2 \text{ (} \vec{a}. \vec{b} ^2 + 2 \text{ (} \vec{b}. \vec{b} ^2 + 2 \text{ (} b$		For correct diagram	
25  a,b,c are unit vectors		$y = \frac{1}{5}\sqrt{5^2 - x^2}$	i
	way a t		
$\vec{a} + \vec{b} + \vec{c} = \vec{0} \text{ (given)}$ $\therefore (\vec{a} + \vec{b} + \vec{c})^{2} = 0$ $\therefore  \vec{a} ^{2} +  \vec{b} ^{2} +  \vec{c} ^{2} + 2 (\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a}) = 0$ $1 + 1 + 1 + 2 (\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a}) = 0$ $\therefore \vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = -\frac{3}{2}$ $26$ $y = 3 \cos(\log x) + 4 \sin(\log x)$ $\frac{dy}{dx} = -3 \sin(\log x) + 4 \cos(\log x)$ $x \frac{dy}{dx^{2}} = -3 \sin(\log x) + 4 \cos(\log x)$ $x \frac{d^{2}y}{dx^{2}} + \frac{dy}{dx} = -3 \cos(\log x) + 4 \sin(\log x) + 4 \sin(\log x)$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{d^{2}y}{dx} +$	25		1
$ \frac{(\vec{a} + \vec{b} + \vec{c})^2 = 0}{(- \vec{a} ^2 +  \vec{b} ^2 +  \vec{c} ^2 + 2)} = 0 $ $ \frac{(\vec{a} + \vec{b} + \vec{c})^2 = 0}{(- \vec{a} ^2 +  \vec{b} ^2 +  \vec{c} ^2 + 2)} = 0 $ $ \frac{(\vec{a} + \vec{b} + \vec{c})^2 = 0}{(- \vec{a} + \vec{b} ^2 +  \vec{c} ^2 + 2)} = 0 $ $ \frac{(\vec{a} + \vec{b} + \vec{c})^2 + (\vec{c} + \vec{c} + c$	- 27		1
$ \frac{  \vec{a} ^2 +  \vec{b} ^2 +  \vec{c} ^2 + 2 (\vec{a}.\vec{b} + \vec{b}.\vec{c} + \vec{c}.\vec{a}) = 0}{1 + 1 + 1 + 2 (\vec{a}.\vec{b} + \vec{b}.\vec{c} + \vec{c}.\vec{a}) = 0} $ $ \frac{  \vec{a} ^2 +   \vec{b} ^2 +   \vec{c} ^2 + 2 (\vec{a}.\vec{b} + \vec{b}.\vec{c} + \vec{c}.\vec{a}) = 0}{2} $ $ \frac{  \vec{a} ^2 +   \vec{b} ^2 +   \vec{b} ^2 +   \vec{c} ^2 +   \vec{c}  ^2 +$	2 11 2		
$ \frac{1+1+1+2}{a\cdot \vec{a}\cdot \vec{b}+\vec{b}\cdot \vec{c}+\vec{c}\cdot \vec{a}=0} = 0 $ $ \frac{a\cdot \vec{a}\cdot \vec{b}+\vec{b}\cdot \vec{c}+\vec{c}\cdot \vec{a}=-\frac{3}{2}}{\frac{3}{2}} $ $ \frac{y=3\cos(\log x)+4\sin(\log x)}{\frac{dy}{dx}=-3\sin(\log x)\frac{1}{x}+4\cos(\log x)\frac{1}{x}} $ $ \frac{x\frac{dy}{dx}=-3\sin(\log x)+4\cos(\log x)}{x^2\frac{d^2y}{dx^2}+\frac{dy}{dx}=-3\cos(\log x)\frac{1}{x}-4\sin(\log x)\frac{1}{x}} $ $ \frac{x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}=-3\cos(\log x)+4\sin(\log x)}{x^2y_2+xy_1+y=0} $ $ \frac{1}{27} $ $ \int \sqrt{\frac{\sqrt{13}}{2}}-(x-\frac{3}{2})^2 dx $ $ \frac{1}{\sqrt{2}} $ $ \frac{2x^2-3}{4}\sqrt{1+3x-x^2}+\frac{13}{8}\sin^{-1}\frac{2x-3}{\sqrt{13}}+c $ OR		$\frac{1}{2}(a+b+c) = 0$ $\frac{1}{2}$	
$ \frac{3 \cdot \vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = -\frac{3}{2}}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = -\frac{3}{2}}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = -\frac{3}{2}}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = -\frac{3}{2}}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = -\frac{3}{2}}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = -\frac{3}{2}}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = -\frac{3}{2}}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{c} = -\frac{3}{2}}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{c} = -\frac{3}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{c} = -\frac{3}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{c} = -\frac{3}{2} $ $ \frac{3 \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{c} = -\frac{3}{2} $ $ \frac{3 \cdot \vec{c} + \vec{c} \cdot \vec{c} + \vec{c} \cdot \vec{c} = -\frac{3}{2} $ $ \frac{3 \cdot \vec{c} + \vec{c} \cdot \vec{c} + \vec{c} \cdot \vec{c} \cdot \vec{c} = -\frac{3}{2} $ $ \frac{3 \cdot \vec{c} + \vec{c} \cdot \vec{c} \cdot \vec{c} + \vec{c} \cdot \vec{c} \cdot \vec{c} = -\frac{3}{2} $ $ \frac{4 \cdot \vec{c} + \vec{c} \cdot \vec{c} \cdot \vec{c} + \vec{c} \cdot \vec{c} $		$\frac{1}{1+1+1+2} \left( \vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} \right) = 0$	
26 $y = 3 \cos(\log x) + 4 \sin(\log x)$ $\frac{dy}{dx} = -3 \sin(\log x) \frac{1}{x} + 4 \cos(\log x) \frac{1}{x}$ $x \frac{dy}{dx} = -3 \sin(\log x) + 4 \cos(\log x)$ $x \frac{d^{2}y}{dx^{2}} + \frac{dy}{dx} = -3 \cos(\log x) \frac{1}{x} - 4 \sin(\log x) \frac{1}{x}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{d^{2}y}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx} + x \frac{d^{2}y}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx} + x \frac{d^{2}y}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx} + x \frac{d^{2}y}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx} + x \frac{d^{2}y}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx} + x \frac{d^{2}y}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx} + x \frac{d^{2}y}{dx} = -\{3 \cos(\log x) + 4 \sin(\log x)\}$ $x^{2} \frac{d^{2}y}{dx} + x d^{2$		$\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{d} = -\frac{3}{2}$	
26 $\frac{y=3\cos(\log x)+4\sin(\log x)}{\frac{dy}{dx}=-3\sin(\log x)\frac{1}{x}+4\cos(\log x)\frac{1}{x}}$ $\frac{dy}{dx}=-3\sin(\log x)+4\cos(\log x)$ $\frac{x}{x}\frac{dy}{dx}=-3\sin(\log x)+4\cos(\log x)$ $\frac{x}{x}\frac{d^2y}{dx^2}+\frac{dy}{dx}=-3\cos(\log x)\frac{1}{x}-4\sin(\log x)\frac{1}{x}$ $\frac{x^2}{dx^2}+x\frac{dy}{dx}=-\{3\cos(\log x)+4\sin(\log x)\}$ $\frac{x^2y_2+xy_1+y=0}{2}$ 27 $\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^2-\left(x-\frac{3}{2}\right)^2}dx$ $\frac{1}{\sqrt{2}}\frac{1}{\sqrt{2}$		6	
$x \frac{dy}{dx} = -3\sin(\log x) + 4\cos(\log x)$ $x \frac{d^2y}{dx^2} + \frac{dy}{dx} = -3\cos(\log x) \frac{1}{x} - 4\sin(\log x) \frac{1}{x}$ $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} = -\{3\cos(\log x) + 4\sin(\log x)\}$ $x^2 y_2 + x y_1 + y = 0$ $\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^2 - \left(x - \frac{3}{2}\right)^2} dx$ $WKT \int \sqrt{(a)^2 - (x)^2} dx = \frac{x}{2} \sqrt{(a)^2 - (x)^2} + \frac{a^2}{2} \sin^{-1}\left(\frac{x}{a}\right) + c$ $= \frac{2x - 3}{4} \sqrt{1 + 3x - x^2} + \frac{13}{8} \sin^{-1}\frac{2x - 3}{\sqrt{13}} + c$ OR	26	$y = 3\cos(\log x) + 4\sin(\log x)$	
$x \frac{dy}{dx} = -3\sin(\log x) + 4\cos(\log x)$ $x \frac{d^2y}{dx^2} + \frac{dy}{dx} = -3\cos(\log x) \frac{1}{x} - 4\sin(\log x) \frac{1}{x}$ $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} = -\{3\cos(\log x) + 4\sin(\log x)\}$ $x^2 y_2 + x y_1 + y = 0$ $\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^2 - \left(x - \frac{3}{2}\right)^2} dx$ $WKT \int \sqrt{(a)^2 - (x)^2} dx = \frac{x}{2} \sqrt{(a)^2 - (x)^2} + \frac{a^2}{2} \sin^{-1}\left(\frac{x}{a}\right) + c$ $= \frac{2x - 3}{4} \sqrt{1 + 3x - x^2} + \frac{13}{8} \sin^{-1}\frac{2x - 3}{\sqrt{13}} + c$ OR	ine pagent	$\frac{dy}{dy} = -3\sin(\log x) - \frac{1}{1} + 4\cos(\log x) - \frac{1}{1}$	
$x \frac{d^{2}y}{dx^{2}} + \frac{dy}{dx} = -3\cos(\log x) \frac{1}{x} - 4\sin(\log x) \frac{1}{x}$ $x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3\cos(\log x) + 4\sin(\log x)\}$ $x^{2}y_{2} + xy_{1} + y = 0$ $\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^{2} - \left(x - \frac{3}{2}\right)^{2}} dx$ $WKT \int \sqrt{(a)^{2} - (x)^{2}} dx = \frac{x}{2} \sqrt{(a)^{2} - (x)^{2}} + \frac{a^{2}}{2} \sin^{-1}\left(\frac{x}{a}\right) + c$ $\frac{2x - 3}{4} \sqrt{1 + 3x - x^{2}} + \frac{13}{8} \sin^{-1}\frac{2x - 3}{\sqrt{13}} + c$ OR	1	$\frac{dx}{dy}$	1
$x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3\cos(\log x) + 4\sin(\log x)\}$ $x^{2}y_{2} + xy_{1} + y = 0$ $\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^{2} - \left(x - \frac{3}{2}\right)^{2}} dx$ $WKT \int \sqrt{(a)^{2} - (x)^{2}} dx = \frac{x}{2}\sqrt{(a)^{2} - (x)^{2}} + \frac{a^{2}}{2}\sin^{-1}\left(\frac{x}{a}\right) + c$ $= \frac{2x - 3}{4}\sqrt{1 + 3x - x^{2}} + \frac{13}{8}\sin^{-1}\frac{2x - 3}{\sqrt{13}} + c$ OR			
$x^{2} \frac{d^{2}y}{dx^{2}} + x \frac{dy}{dx} = -\{3\cos(\log x) + 4\sin(\log x)\}$ $x^{2}y_{2} + xy_{1} + y = 0$ $\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^{2} - \left(x - \frac{3}{2}\right)^{2}} dx$ $WKT \int \sqrt{(a)^{2} - (x)^{2}} dx = \frac{x}{2}\sqrt{(a)^{2} - (x)^{2}} + \frac{a^{2}}{2}\sin^{-1}\left(\frac{x}{a}\right) + c$ $= \frac{2x - 3}{4}\sqrt{1 + 3x - x^{2}} + \frac{13}{8}\sin^{-1}\frac{2x - 3}{\sqrt{13}} + c$ OR		$x\frac{d^2y}{dx^2} + \frac{dy}{dx} = -3\cos(\log x)\frac{1}{x} - 4\sin(\log x)\frac{1}{x}$	1
$x^{2}y_{2} + xy_{1} + y = 0$ $\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^{2} - \left(x - \frac{3}{2}\right)^{2}} dx$ $WKT \int \sqrt{(a)^{2} - (x)^{2}} dx = \frac{x}{2}\sqrt{(a)^{2} - (x)^{2}} + \frac{a^{2}}{2}\sin^{-1}\left(\frac{x}{a}\right) + c$ $= \frac{2x - 3}{4}\sqrt{1 + 3x - x^{2}} + \frac{13}{8}\sin^{-1}\frac{2x - 3}{\sqrt{13}} + c$ OR			
$\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^2 - \left(x - \frac{3}{2}\right)^2} dx$ $WKT \int \sqrt{(a)^2 - (x)^2} dx = \frac{x}{2} \sqrt{(a)^2 - (x)^2} + \frac{a^2}{2} \sin^{-1}\left(\frac{x}{a}\right) + c$ $\frac{2x - 3}{4} \sqrt{1 + 3x - x^2} + \frac{13}{8} \sin^{-1}\frac{2x - 3}{\sqrt{13}} + c$ $OR$		$\frac{x}{dx^2} + x \frac{1}{dx} = -\{3\cos(\log x) + 4\sin(\log x)\}$	
$\int \sqrt{\left(\frac{\sqrt{13}}{2}\right)^2 - \left(x - \frac{3}{2}\right)^2} dx$ $WKT \int \sqrt{(a)^2 - (x)^2} dx = \frac{x}{2} \sqrt{(a)^2 - (x)^2} + \frac{a^2}{2} \sin^{-1}\left(\frac{x}{a}\right) + c$ $= \frac{2x - 3}{4} \sqrt{1 + 3x - x^2} + \frac{13}{8} \sin^{-1}\frac{2x - 3}{\sqrt{13}} + c$ OR	27	$x^-y_2 + xy_1 + y = 0$	1
WKT $\int \sqrt{(a)^2 - (x)^2} dx = \frac{x}{2} \sqrt{(a)^2 - (x)^2} + \frac{a^2}{2} \sin^{-1} \left(\frac{x}{a}\right) + c$ $= \frac{2x - 3}{4} \sqrt{1 + 3x - x^2} + \frac{13}{8} \sin^{-1} \frac{2x - 3}{\sqrt{13}} + c$ OR		$\sqrt{(\sqrt{13})^2}$ $\sqrt{(3)^2}$	1
WKT $\int \sqrt{(a)^2 - (x)^2} dx = \frac{x}{2} \sqrt{(a)^2 - (x)^2} + \frac{a^2}{2} \sin^{-1} \left(\frac{x}{a}\right) + c$ $= \frac{2x - 3}{4} \sqrt{1 + 3x - x^2} + \frac{13}{8} \sin^{-1} \frac{2x - 3}{\sqrt{13}} + c$ OR		$\int \sqrt{\left(\frac{\sqrt{2}}{2}\right)} - \left(x - \frac{3}{2}\right) dx$	1/2
$= \frac{2x-3}{4}\sqrt{1+3x-x^2} + \frac{13}{8}\sin^{-1}\frac{2x-3}{\sqrt{13}} + c$ OR		x = x = x = x = x = x = x = x = x = x =	
$= \frac{2x-3}{4}\sqrt{1+3x-x^2} + \frac{13}{8}\sin^{-1}\frac{2x-3}{\sqrt{13}} + c$ OR		WKT $\int \sqrt{(a)^2 - (x)^2} dx = \frac{\pi}{2} \sqrt{(a)^2 - (x)^2 + \frac{\pi}{2}} \sin^{-1} \left(\frac{x}{a}\right) + c$	
가장 보이 가는 사용이 가지로 이 이 사람이 되는 것이 되었다. 그리고 있어 가장 하는 것은 이 경기에는 경험에 가장 및 장면에 가장 되었다. 중요 그렇게 되었다.		$=\frac{2x-3}{4}\sqrt{1+3x-x^2}+\frac{13}{8}\sin^{-1}\frac{2x-3}{\sqrt{13}}+c$	1 /2
## [H. H. H		OR	

	$\int_{0}^{\pi} (xe^{x} + \sin\frac{\pi x}{4}) dx = \left[xe^{x} - e^{x}\right]_{0}^{1} + \left[-\frac{4}{\pi}\cos(\frac{\pi x}{4})\right]_{0}^{1}$	1
	$=1+\frac{4}{\pi}\frac{\left(\sqrt{2}-1\right)}{\sqrt{2}}$	
3	Diagram	1
	$2\int_{0}^{a} vdx = 2\int_{0}^{4} vdx$	1/2
		1/2
	$2\int_{0}^{a} y dx = 2\int_{a}^{4} y dx$ $\Rightarrow \int_{0}^{a} \sqrt{x} dx = \int_{a}^{4} \sqrt{x} dx$	1
	$\Rightarrow 2a^{3/2} = 8$	
	$\Rightarrow a = 4^{2/3}$	
29	It is a homogenous differential equation,	
. 7	Put $y = vx$ Then $dv = dx/x$	
	$\frac{y}{x} = \log cx$	1
		1
	$x = ke^{\frac{y}{x}}$	
	OR OR	
	$\frac{dy}{dx} + 2\frac{y}{x} = x$ 1.F. = $x^2$	1/2
	1.F. = $x^2$	1
	$yx^2 = \frac{x^4}{4} + c$	
30	correct graph	1.5
50	correct corner points	1
	Hence, Z is maximum at $x = \frac{7}{2}$ , $y = \frac{3}{2}$ and maximum value = 19	1
31	P(E) = P  (black ball in first draw) = 10/15	1/2
	Also given that the first ball drawn is black, i.e., event E has occurred, now there are 9 black balls and	
	five white balls left in the urn. Therefore, the probability that the second ball drawn is black, given	
	that the ball in the first draw is black, is nothing but the conditional probability of F given that E has	
	occurred.	1/2
	i.e. $P(F E) = 9/14$	
	By multiplication rule of probability, we have	1
	$P(E \cap F) = P(E) P(F \mid E)$	1
	_10 9 3	
	$=\frac{10}{15} \times \frac{9}{14} = \frac{3}{7}$	
	OR  The random variable X has a probability distribution $P(X)$ of the following form, where $k$ is some	
1	number:	1
1		

	$\Rightarrow k+2k+3k=1 \Rightarrow k=1/6$	
	(b) $P(x<2)=p(x=0)+p(x=1)=k+2k=3(\frac{1}{6})=\frac{1}{2}$	1
	(c) $P(x \ge 2) = 3k + 0 = 3(\frac{1}{6}) + 0 = \frac{1}{2}$	
	6 2	
2	ONE -ONE SECTION D	
	Correct example	2.5
	f is not one-one.	
	Onto :-	
	Also, f is not onto for if so then for $1 \in \mathbb{R} \exists x \in \mathbb{R}$ such that $f(x) = 1$	
	which gives $\frac{x}{x^2} = 1$ . But there is no such x in the denset. By	2.5
	which gives $\frac{x}{x^2+1} = 1$ . But there is no such x in the domain <b>R</b> , since the equation $x^2 - x + 1 = 0$ does not give any real value of x.	
	$\mathbf{OR}$	
	Let R be defined on $N \times N$ as	
	$(a,b)R(c,d) \iff ad(b+c)=bc(a+d).$ (1) Reflexivity:	
	R is reflexive.	1.5
	Symmetry:	
1	R is symmetric	1.5
=_	Transitivity: R is transitive	5537
	∴R is Equivalence Relation.	2
3		
	$\begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix} \begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix} = \begin{bmatrix} 8 & 0 & 0 \\ 0 & 8 & 0 \\ 0 & 0 & 8 \end{bmatrix}$	1
	$\begin{bmatrix} -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix} \begin{bmatrix} 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix} = \begin{bmatrix} 0 & 8 & 0 \\ 0 & 0 & 8 \end{bmatrix}$	
	$B^{-1} = \frac{1}{8} \begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix}$	
	$B^{-1} = \frac{1}{8} \begin{bmatrix} -7 & 1 & 3 \end{bmatrix}$	
	Now Matrix from of equations	1
ą.		
-	$\begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 4 \\ 9 \\ 1 \end{bmatrix}$	1
	$X=B^{-1}C$	1.
	Hence $x = 3$ , $y = -2$ and $z = -1$ .	
4	1	2
	$\int \frac{1}{\cos(x-a)\cos(x-b)} dx$	
	Multiplying and dividing with sin(a-b)	1 -
	$\frac{1}{\sin(a-b)} \int \frac{\sin(a-b)}{\cos(x-a)\cos(x-b)} dx$	1
	$\sin(a-b)^{-1}\cos(x-a)\cos(x-b)$	1
	$= \frac{1}{\sin(a-b)} \int \frac{\sin[x-b-x+a]}{\cos(x-a)\cos(x-b)} dx$	
	$\sin(a-b)$ $\int \cos(x-a)\cos(x-b)$ $dx$	1
	$1 \qquad c\sin(x-b)\cos(x-a) = \cos(x-b)\sin(x-a)$	
	$= \frac{1}{\sin(a-b)} \int \frac{\sin(x-b)\cos(x-a) - \cos(x-b)\sin(x-a)}{\cos(x-a)\cos(x-b)} dx$	
	$= \frac{1}{\sin(a-b)} \int [\tan(x-b) - \tan(x-a)] dx$	2
	$\sin(a-b)$	

$\Gamma$		
	$= \frac{1}{\sin(a-b)} \log \frac{\cos(x-a)}{\cos(x-b)} + C$	
	$\sin(a-b) = \cos(x-b)$	
	OR	
	Let $I = \int_0^{\frac{\pi}{2}} \log \sin x \ dx$ (i)	
	Then, using P-4	1
	$\pi$	1 3 1 1 1 1 1
	$1 = \int_0^{\frac{\pi}{2}} \log \sin(\frac{\pi}{2} - x) \ dx = \int_0^{\frac{\pi}{2}} \log \cos x \ dx (ii)$	
	$\frac{\pi}{2}$ $\int_0^{\pi} \log \cos x  dx =(11)$	2
	$\frac{2}{6}$	
	$2I = \int \log \sin x  dx - \frac{\pi}{2} \log 2$	2
	0 2	
	<u> - 김대양하는</u> 보안 하다면 하면 있는 하는 사람이 되는 사람이 되었다. 그 사람이 모든 모든 사람이 되었다.	
	$2I = I - \frac{\pi}{2} \log 2$	
	$I = -\frac{\pi}{2}\log 2$	
35	For finding	1 10 × 2 × 3
	$x_1 = -1, y_1 = -1, z_1 = -1$	1.5
	$a_1=7, b_1=-6, c_1=1$	50 July 10 10 10 10 10 10 10 10 10 10 10 10 10
	$x_2=3, y_2=5, z_2=7$	
	$a_2=1,b_2=-2,c_2=1$	
	Then, using the distance formula	2
	the distance between the given lines is $2\sqrt{29}$ units.	0.5
	OR	
	Find d.r. of required line where a=-4, b= 4 & c=-1	1
	Equation of required line in vector equation & cartesian equations $=\frac{x-1}{-4} = \frac{y-1}{4} = \frac{z-1}{-1}$	3.354
	$\& \vec{r} = (\hat{i} + \hat{j} + \hat{k}) + \lambda(-4\hat{i} + 4\hat{j} - \hat{k})$	
	And find angle $\theta = \cos^{-1} \frac{24}{\sqrt{609}}$	
	SECTION E	
36	(i) $(300-3x) & (80+x)$	1
30	(ii) $-3x^2 + 60x + 24000$	1
	(iii) 10	$\frac{1}{2}$
	Or	
	11 <sup>th</sup> July	
37	$P(E_1) = 3/10$ $P(E_2) = 1/5$ $P(E_3) = 1/10$ $P(E_4) = 2/5$	
	Let A be the event of coming late	
	를 5위하다 2000년에 가장 있다. 그리고 있는데, 그리고 그리고 그리고 있는데 회사 보이고 있다. 그리고 있는데, 그리고 있다. 그리고 그리고 있다. 그리고 있다. 그리고 있다. 이 경향을 되었다	
	$P(A/E_1) = 1/4$ $P(A/E_2) = 1/3$ $P(A/E_3) = 1/12$ $P(A/E_4) = 0$	
	(i) Total probability $P(A) = \sum_{i=1}^{4} P(E_i) . P(A/E_i)$	1
	(i) Total probability $I(A) = \sum_{i=1}^{n} I(E_i).I(A/E_i)$	
	3 1 1 1 1 2	
	$= \frac{3}{10} \times \frac{1}{4} + \frac{1}{5} \times \frac{1}{3} + \frac{1}{10} \times \frac{1}{12} + \frac{2}{5} \times 0$	
	$= \frac{10}{2} + \frac{3}{3} + \frac{3}{10} + \frac{12}{3} + \frac{3}{10} + \frac{3}{10}$	
	$=\frac{3}{20}$	
	에 바다가 얼마면서 사업이 가게 되었다. 그는 이 생생일을 하는 것이 많아 그렇게 되었다면 하는데 이번 사업이 되었다면 하는데 그렇게 하는데 모든데 하는데 이번 사람이 되었다면 하는데 이번 사업이 되었다면 하는데 되	
1	(ii) Using Baye's Theorem	

	$P(E_1/A) = \frac{P(E_1).P(A/E_1)}{\sum_{i=1}^{4} P(E_i).P(A/E_i)}$	
	$\sum_{i=1}^{n} P(E_i) . P(A/E_i)$	
	$\frac{3}{10} \times \frac{1}{4}$	
	$= \frac{10  4}{\frac{3}{10} \times \frac{1}{4} + \frac{1}{5} \times \frac{1}{3} + \frac{1}{10} \times \frac{1}{12} + \frac{2}{5} \times 0}$	
	$=\frac{1}{2}$	
38	(i) the Direction ratios of $OA = 1,0,0$	
	(ii) the Equation of diagonal $OB' = \frac{x}{1} = \frac{y}{2} = \frac{z}{3}$ (iii) find the Equation of Line $O'B' = \frac{x}{1} = \frac{y}{2} = \frac{z-3}{0}$	
	OR	
	the cartesian equation of line along $\overrightarrow{A'C'} = \frac{x-1}{1} = \frac{y}{-2} = \frac{z-3}{0}$	