

SET	A/B/C
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**INDIAN SCHOOL MUSCAT
FINAL EXAMINATION 2022
MATHEMATICS (041)**

CLASS: XII

Max.Marks: 80

MARKING SCHEME					
SET	Q.NO	VALUE POINTS			MARKS SPLIT UP
A	1.	a) not onto	a) 25y	c) Continuous everywhere but differentiable everywhere except 0	1
	2.	c) -3, 4	c) -3, 4	c) -3, 4	1
	3.	a) $x+y = 0$	a) $a + b = 0$	a) $x+y = 0$	1
	4.	b) $e^x \sec x + C$	b) $e^x \sec x + C$	b) $e^x \sec x + C$	1
	5.	a) 2	c) Continuous everywhere but differentiable everywhere except 0	a) not onto	1
	6.	b) $2x \cos x^2$	b) $-2x \sin(x^2)$	b) $2x \cos x^2$	1
	7.	a) $25y$	a) not onto	d) $49 y$	1
	8.	b) $x \cos x$	b) $-x \sin x$	b) $x \cos x$	1
	9.	a) 1.5cm/s	a) 2.1 cm/s	a) 1.5cm/s	1
	10.	d) 640	b) 3040	d) 640	1
	11.	a) $f(x)$	a) $g(x)$	a) $f(x)$	1
	12.	c) $-2\cos\sqrt{x} + C$	c) $-2\cos\sqrt{x} + C$	c) $-2\cos\sqrt{x} + C$	1
	13.	c) $\frac{3}{2}$	c) $\frac{3}{2}$	c) $\frac{3}{2}$	1
	14.	a) 2	a) 2	a) 2	1

	15.	b) $32/3$ sq. units	b) $32/3$ sq. units	b) $32/3$ sq. units	1					
	16.	a) I	a) I	a) I	1					
	17.	d) 17	d) 17	d) 17	1					
	18.	d) $5\hat{i} - 10\hat{j} + 10\hat{k}$	b) $8\hat{i} - 4\hat{j} + 8\hat{k}$	b) $2(\hat{i} - 2\hat{j} + 2\hat{k})$	1					
	19.	b)	c)	b)	1					
	20.	c)	b)	c)	1					
	21.	As $f(x)$ is continuous at $x = 2$ $\lim_{x \rightarrow 2^-} f(x) = \lim_{x \rightarrow 2^-} (3x - 1)$ $= 3 \times 2 - 1 = 6 - 1 = 5$ And $\lim_{x \rightarrow 2^+} f(x) = \lim_{x \rightarrow 2^+} (2x + 1)$ $= 2 \times 2 + 1 = 4 + 1 = 5$ $\Rightarrow f(2^-) = f(2^+) = k$ since f is continuous at $x = 2$ $\therefore k = 5$				1				
	22.	The air bubble is in the shape of a sphere. Now, the volume of an air bubble (V) with radius (r) is given by, $V = \frac{4}{3}\pi r^3$ The rate of change of volume (V) with respect to time (t) is given by, $\frac{dV}{dt} = \frac{4}{3}\pi \frac{d}{dr}(r^3) \cdot \frac{dr}{dt} = \frac{4}{3}\pi(3r^2) \cdot \frac{dr}{dt} = 4\pi r^2 \frac{dr}{dt}$ It is given that $\frac{dr}{dt} = \frac{1}{2}$ cm/s Therefore, when $r = 1$ cm, $\frac{dV}{dt} = 4\pi(1)^2 \left(\frac{1}{2}\right) = 2\pi \text{cm}^3/\text{s}$ Hence, the rate at which the volume of the bubble increases is $2\pi \text{cm}^3/\text{s}$.				1				
	OR									
	$f(x) = x^3 - 3x^2 + 4x$ $f'(x) = 3x^2 - 6x + 4$ $= 3(x^2 - 2x + 1) + 1$ $= 3(x - 1)^2 + 1$ For function to be increasing function $f'(x)$ must be > 0 $3(x - 1)^2 + 1 > 0 \forall x \in \mathbb{R}$ Hence $f(x)$ is strictly increasing on \mathbb{R} .					1				

<p>23. $X = 3; Y = 2; Z = 4$ and $b = b$</p> <p>OR</p> <p>We have:</p> $\begin{bmatrix} 1 & 0 & 2 \\ x & -5 & -1 \\ 2 & 0 & 3 \end{bmatrix} \begin{bmatrix} x \\ 4 \\ 1 \end{bmatrix} = 0$ $\Rightarrow \begin{bmatrix} x+0-2 & 0-10+0 & 2x-5-3 \end{bmatrix} \begin{bmatrix} x \\ 4 \\ 1 \end{bmatrix} = 0$ $\Rightarrow \begin{bmatrix} x-2 & -10 & 2x-8 \end{bmatrix} \begin{bmatrix} x \\ 4 \\ 1 \end{bmatrix} = 0$ $\Rightarrow [x(x-2)-40+2x-8] = 0$ $\Rightarrow [x^2-2x-40+2x-8] = [0]$ $\Rightarrow [x^2-48] = [0]$ $\therefore x^2-48=0$ $\Rightarrow x^2 = 48$ $\Rightarrow x = \pm 4\sqrt{3}$	$\frac{1}{2}$ each	
<p>24.</p> $\begin{vmatrix} 2 + \sqrt{3} & 3 - \sqrt{2} \\ 3 + \sqrt{2} & 2 - \sqrt{3} \end{vmatrix} = (4 - 3) - (9 - 2)$ $= 1 - 7$ $= -6$	1 1	
<p>25.</p> <p>vector $AB = (1 + 2)i + (2 - 3)j + (3 - 5)k = 3i - j - 2k$</p> <p>vector $BC = (7 - 1)i + (0 - 2)j + (-1 - 3)k = 6i - 2j - 4k$</p> <p>vector $CA = (7 + 2)i + (0 - 3)j + (-1 - 5)k = 9i - 3j - 6k$</p> <p>Now, $vector AB ^2 = 14$, $vector BC ^2 = 56$, $vector CA ^2 = 126$</p> $\Rightarrow vector AB = \sqrt{14}, vector BC = 2\sqrt{14}, vector CA = 3\sqrt{14}$ $\Rightarrow vector CA = vector AB + vector BC $ <p>Hence the points A, B and C are collinear.</p>	1 1	
<p>26.</p> $\tan^{-1}(\tan \theta) = \theta ; \quad \theta \in \left[-\frac{\pi}{2}, \frac{\pi}{2} \right]$ $\tan^{-1} \left(\tan \left(\frac{2\pi}{3} \right) \right)$ $= \tan^{-1}(\tan(\pi - \frac{\pi}{3}))$ $= \tan^{-1}(-\tan(\frac{\pi}{3}))$ $= \tan^{-1}(\tan(-\frac{\pi}{3}))$ $= -\frac{\pi}{3}$	<p>Given that $\sin^{-1} \left(\sin \frac{2\pi}{3} \right)$.</p> <p>We know that $\sin^{-1} (\sin x) = x$ if $x \in \left[-\frac{\pi}{2}, \frac{\pi}{2} \right]$, which is the principal value branch of $\sin^{-1} x$.</p> $\therefore \sin^{-1} \left(\sin \frac{2\pi}{3} \right) = \sin^{-1} \left(\sin \left(\pi - \frac{\pi}{3} \right) \right) = \sin^{-1} \left(\sin \frac{\pi}{3} \right) = \frac{\pi}{3} \in \left[-\frac{\pi}{2}, \frac{\pi}{2} \right]$ <p>ANS :0</p>	1 1 1

<p>27.</p> <p>$y = (\tan^{-1}x)^2$ _____ (1)</p> <p>On diff. wrt x we get</p> $\frac{dy}{dx} = 2\tan^{-1}x \times \frac{1}{x^2+1} \quad \text{_____ (2)}$ <p>again diff. wrt we get</p> $\Rightarrow \frac{d^2y}{dx^2} = 2\left[\frac{\frac{1}{1+x^2} \times (1+x^2) - \tan^{-1}x \cdot 2x}{(1+x^2)^2}\right]$ $\Rightarrow \frac{d^2y}{dx^2} = 2\left[\frac{1-2x\tan^{-1}x}{(1+x^2)^2}\right]$ $\Rightarrow (1+x^2)^2 \frac{d^2y}{dx^2} = 2 - 4x\tan^{-1}x$ $(1+x^2)y_2 + 4x\tan^{-1}x = 2$ <p>From equation (2)</p> $[(1+x^2)y_2 + 2x(1+x^2)y_1 = 2]$ <p>OR</p> <p>Take log on both side $\log x^m + \log y^n + (m+n)\log = y(x+y)$</p> $\frac{d^2y}{dx^2} = \frac{x \cdot \frac{dy}{dx} - y \cdot 1}{x^2}$ $m \log x + n \log y = (m+n) \log(x+y)$ <p>Differentiating w.r.t x on both sides we get,</p> $\Rightarrow \frac{x \cdot \frac{dy}{dx} - y}{x^2}$ $m \cdot \frac{1}{x} + n \cdot \frac{1}{y} \frac{dy}{dx} = (m+n) \cdot \frac{1}{(x+y)} \left(1 + \frac{dy}{dx}\right)$ $\text{But } \frac{dy}{dx} = \frac{y}{x}$ $\frac{m}{x} + \frac{n}{y} \frac{dy}{dx} = \frac{m+n}{x+y} \left(1 + \frac{dy}{dx}\right)$ $\frac{dy}{dx} \left(\frac{n}{y} - \frac{m+n}{x+y}\right) = \frac{m+n}{x+y} - \frac{m}{x}$ $\frac{dy}{dx} \left(\frac{nx-my}{y}\right) = \frac{mx-my}{x}$ $\therefore \frac{dy}{dx} = \frac{y}{x}$ $\frac{d^2y}{dx^2} = 0.$ <p>Hence proved</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
<p>28.</p> $I = \int_0^\pi \frac{x \frac{\sin x}{\cos x}}{1 + \frac{\sin x}{\cos x}} dx = \int_0^\pi \frac{x \sin x}{1 + \sin x} dx \quad \dots(i)$ $I = \int_0^\pi \frac{(\pi-x) \sin(\pi-x)}{1 + \sin(\pi-x)} dx \quad \left[\because \int_0^a f(x) dx = \int_0^a f(a-x) dx \right]$ $I = \int_0^\pi \frac{(\pi-x) \sin x}{1 + \sin x} dx \quad \dots(ii)$ $2I = \int_0^\pi \frac{\pi \sin x}{1 + \sin x} dx \quad [\text{Using (i) and (ii)}]$ $2I = \pi \int_0^\pi \frac{\sin x (1 - \sin x)}{(1 + \sin x)(1 - \sin x)} dx$	<p>1</p> <p>1</p>

$$\begin{aligned}
&= \pi \int_0^\pi \frac{\sin x - \sin^2 x}{1 - \sin^2 x} dx = \pi \int_0^\pi \left[\frac{\sin x}{\cos^2 x} - \frac{\sin^2 x}{\cos^2 x} \right] dx \\
&= \pi \int_0^\pi \tan x \sec x dx - \pi \int_0^\pi \tan^2 x dx \\
&= \pi \int_0^\pi \tan x \sec x dx - \pi \int_0^\pi (\sec^2 x - 1) dx \\
&= \pi \int_0^\pi \sec x \tan x dx - \pi \int_0^\pi \sec^2 x dx + \pi \int_0^\pi 1 dx \\
&= \pi [\sec x]_0^\pi - \pi [\tan x]_0^\pi + \pi [x]_0^\pi + C = \pi[-1 - 1] - 0 + \pi[\pi - 0] = \pi(\pi - 2) \\
I &= \frac{\pi}{2}(\pi - 2)
\end{aligned}$$

1

OR

$$\begin{aligned}
\int_{-1}^2 |x^3 - x| dx &= \int_0^{-1} (x^3 - x) dx + \int_0^1 -(x^3 - x) dx + \int_1^2 (x^3 - x) dx \\
&= \int_{-1}^0 (x^3 - x) dx + \int_0^1 (x - x^3) dx + \int_1^2 (x^3 - x) dx \\
&= [\frac{x^4}{4} - \frac{x^2}{2}]_1^0 + [\frac{x^2}{2} - \frac{x^4}{4}]_0^1 + [\frac{x^4}{4} - \frac{x^2}{2}]_1^2 \\
&= \left[\int x^n dx = \frac{x^{n+1}}{n+1} \right] \\
&= -(\frac{1}{4} - \frac{1}{2}) + (\frac{1}{2} - \frac{1}{4}) + (4 - 2) - (\frac{1}{4} - \frac{1}{2}) \\
&= \frac{-1}{4} + \frac{1}{2} + \frac{1}{2} - \frac{1}{4} + 2 - \frac{1}{4} + \frac{1}{2} \\
&= \frac{3}{2} - \frac{3}{4} + 2 \\
&= \frac{11}{4} \text{ Ans}
\end{aligned}$$

1

1

1

29.

$$\begin{aligned}
I &= \sin^{-1} x \int x dx - \int \left\{ \left(\frac{d}{dx} \sin^{-1} x \right) \int x dx \right\} dx \\
&= \sin^{-1} x \left(\frac{x^2}{2} \right) - \int \frac{1}{\sqrt{1-x^2}} \cdot \frac{x^2}{2} dx \\
&= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \int \frac{-x^2}{\sqrt{1-x^2}} dx \\
&= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \int \left\{ \frac{1-x^2}{\sqrt{1-x^2}} - \frac{1}{\sqrt{1-x^2}} \right\} dx \\
&= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \int \left\{ \sqrt{1-x^2} - \frac{1}{\sqrt{1-x^2}} \right\} dx \\
&= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \int \left\{ \int \sqrt{1-x^2} dx - \int \frac{1}{\sqrt{1-x^2}} dx \right\} \\
&= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \left\{ \frac{x}{2} \sqrt{1-x^2} + \frac{1}{2} \sin^{-1} x - \sin^{-1} x \right\} + C \\
&= \frac{x^2 \sin^{-1} x}{2} + \frac{x}{4} \sqrt{1-x^2} + \frac{1}{4} \sin^{-1} x - \frac{1}{2} \sin^{-1} x + C \\
&= \frac{1}{4}(2x^2 - 1) \sin^{-1} x + \frac{x}{4} \sqrt{1-x^2} + C
\end{aligned}$$

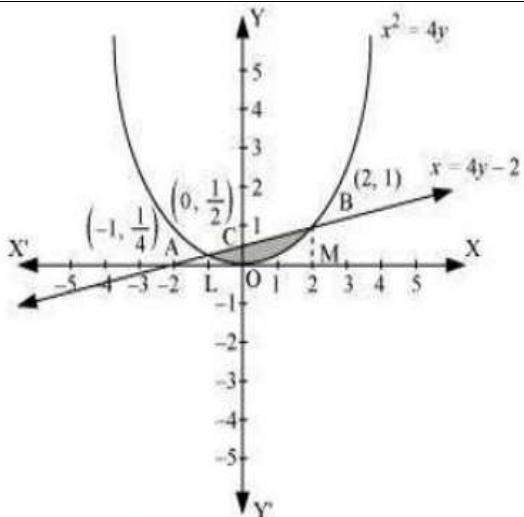
1

1

1

	32.	(i) $V = x(24 - 2x)^2$ (ii) local maxima (iii) side of the square = 4cm	1 1 2
	33.	(i) $x + y + z = 45$ $x + 8 = z$ or $x + 0 \cdot y - z = -8$ and $x + z = 2y$ or $x - 2y + z = 0$ $\begin{bmatrix} 1 & 1 & 1 \\ -1 & 0 & 1 \\ 1 & -2 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 45 \\ 8 \\ 0 \end{bmatrix}$ (ii) $ A = 1(-0+2) - 1(-1-1) + 1(2-0) = 2+2+2=6$ $\Rightarrow A^{-1} = \frac{1}{ A } \text{adj} A = \frac{1}{6} \begin{bmatrix} 2 & -3 & 1 \\ 2 & 0 & -2 \\ 2 & 3 & 1 \end{bmatrix}$ OR (ii) $x=11, y=15, z=19$	2 2
	34.	i) $\vec{PA} = -6\hat{i} - 8\hat{j} - 6\hat{k}$; $\vec{PN} = 6\hat{i} + 2\hat{j} - 6\hat{k}$ ii) $\theta = \cos^{-1}\left(\frac{4}{\sqrt{646}}\right)$ iii) $60\hat{i} + 36\hat{j} + 72\hat{k}$ OR iii) Area = $\frac{1}{2} \sqrt{10080}$ sq. units	1 1 2
	35.	Reflexive: $ a - a = 0$, which is divisible by 4, $\forall a \in A$ $\therefore (a, a) \in R, \forall a \in A \therefore R$ is reflexive Symmetric: let $(a, b) \in R$ $\Rightarrow a - b $ is divisible by 4 $\Rightarrow b - a $ is divisible by 4 ($\because a - b = b - a $) $\Rightarrow (b, a) \in R \therefore R$ is symmetric Transitive: let $(a, b), (b, c) \in R$ $\Rightarrow a - b \& b - c $ are divisible by 4 $\Rightarrow a - b = \pm 4m, b - c = \pm 4n, m, n \in \mathbb{Z}$ Adding we get, $a - c = 4(\pm m \pm n)$ $\Rightarrow (a - c)$ is divisible by 4 $\Rightarrow a - c $ is divisible by 4 $\therefore (a, c) \in R$ $\Rightarrow R$ is transitive Hence R is an equivalence relation in A set of elements related to 1 is {1, 5, 9} and [2] = {2, 6, 10}. 	1 1 1 1 1

36.



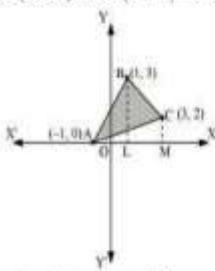
$$y = 1, x = 2$$

$$\begin{aligned}
 &= \int_{-1}^0 \frac{x+2}{4} dx - \int_{-1}^0 \frac{x^2}{4} dx \\
 &= \frac{1}{4} \left[\frac{x^2}{2} + 2x \right]_{-1}^0 - \frac{1}{4} \left[\frac{x^3}{3} \right]_{-1}^0 \\
 &= \frac{1}{4} \left[0 + 0 - \frac{(-1)^2}{2} - 2(-1) \right] - \frac{1}{4} \left[\frac{0^3}{3} - \frac{(-1)^3}{3} \right] \\
 &= -\frac{1}{4} \left[\frac{(-1)}{2} + 2(-1) \right] - \left[-\frac{1}{4} \left(\frac{(-1)^3}{3} \right) \right] \\
 &= -\frac{1}{4} \left[\frac{1}{2} - 2 \right] - \frac{1}{12} \\
 &= \frac{1}{2} - \frac{1}{8} - \frac{1}{12} \\
 &= \frac{7}{24}
 \end{aligned}$$

$$\text{Therefore, required area} = \left(\frac{5}{6} + \frac{7}{24} \right) = \frac{9}{8} \text{ sq. units}$$

OR

$$\text{Area } (\Delta ACB) = \text{Area } (ALBA) + \text{Area } (BLMCB) - \text{Area } (AMCA) \dots (1)$$



Equation of line segment AB is

$$y - 0 = \frac{3-0}{1+1}(x+1)$$

$$y = \frac{3}{2}(x+1)$$

$$\therefore \text{Area } (ALBA) = \int_{-1}^1 \frac{3}{2}(x+1) dx = \frac{3}{2} \left[\frac{x^2}{2} + x \right]_{-1}^1 = \frac{3}{2} \left[\frac{1}{2} + 1 - \frac{1}{2} - 1 \right] = 3 \text{ sq. units}$$

Equation of line segment BC is

$$y - 3 = \frac{2-3}{3-1}(x-1)$$

$$y = \frac{1}{2}(-x+7)$$

$$\therefore \text{Area } (BLMCB) = \int_0^1 \frac{1}{2}(-x+7) dx = \frac{1}{2} \left[-\frac{x^2}{2} + 7x \right]_0^1 = \frac{1}{2} \left[-\frac{9}{2} + 21 + \frac{1}{2} - 7 \right] = 5 \text{ sq. units}$$

Equation of line segment AC is

$$y - 0 = \frac{2-0}{3+1}(x+1)$$

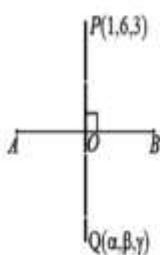
$$y = \frac{1}{2}(x+1)$$

$$\therefore \text{Area } (AMCA) = \frac{1}{2} \int_{-1}^0 (x+1) dx = \frac{1}{2} \left[\frac{x^2}{2} + x \right]_{-1}^0 = \frac{1}{2} \left[\frac{9}{2} + 3 - \frac{1}{2} + 1 \right] = 4 \text{ sq. units}$$

Therefore, from equation (1), we obtain

$$\text{Area } (\Delta ABC) = (3 + 5 - 4) = 4 \text{ sq. units}$$

37.

Let the given line $\frac{x}{1} = \frac{y-1}{2} = \frac{z-2}{3}$ be AB.Any point 'O' on line AB is given by $(k, 2k+1, 3k+2)$ So, direction ratio of the line OP are $k-1, 2k-5, 3k-1$ $\therefore OP \perp AB$

$$\therefore [(k-1) \times 1 + (2k-5) \times 2 + (3k-1) \times 3 = 0]$$

$$\Rightarrow 14k - 14 = 0$$

$$\Rightarrow k = 1$$

Hence, co-ordinate of O are $(1, 3, 5)$ Now, Let image of P(1, 6, 3) in the given line be Q(α, β, γ)

So, 'O' is the mid point of PQ

$$\therefore \frac{\alpha+1}{2} = 1, \frac{\beta+6}{2} = 3, \frac{\gamma+3}{2} = 5$$

$$\Rightarrow \alpha = 1, \beta = 0, \gamma = 7$$

So, The image of P is R(1, 0, 7)

OR

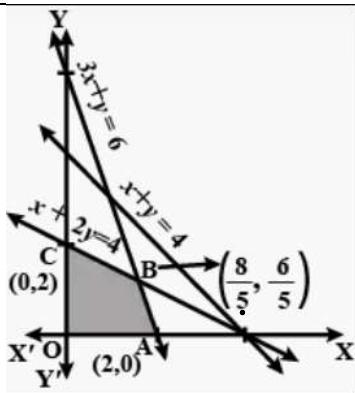
$$\begin{aligned}
 \vec{b}_1 &= \hat{i} + 2\hat{j} + 3\hat{k} \text{ and } \vec{b}_2 = -3\hat{i} + 2\hat{j} + 5\hat{k} \text{ it is parallel to the vector } \vec{b} = \vec{b}_1 \times \vec{b}_2 \text{ Now,} \\
 \vec{b} &= \vec{b}_1 \times \vec{b}_2 \\
 &= \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 1 & 2 & 3 \\ -3 & 2 & 5 \end{vmatrix} \\
 &= 4\hat{i} - 14\hat{j} + 8\hat{k} \\
 &= 2(2\hat{i} - 7\hat{j} + 4\hat{k})
 \end{aligned}$$

Thus, the required line passing through P(-1, 3, -2) and

having the direction ratios $a = 4k, b = -14k, c = 8k$ is

$$\frac{x+1}{4} = \frac{y-3}{-14} = \frac{z+2}{8} \text{ or } \frac{x+1}{2} = \frac{y-3}{-7} = \frac{z+2}{4}$$

38.



1
1
1
1

Corner Point

$$Z = 2x + 5y$$

$$(0, 0)$$

$$2 \times 0 + 5 \times 0 = 0$$

1

$$(2, 0)$$

$$2 \times 2 + 5 \times 0 = 4$$

1

$$(0, 2)$$

$$2 \times 0 + 5 \times 2 = 10 \rightarrow \text{Maximum}$$

$$\left(\frac{8}{5}, \frac{6}{5}\right)$$

$$2 \times \frac{8}{5} + 5 \times \frac{6}{5} = \frac{46}{5}$$

1

**SET
B**

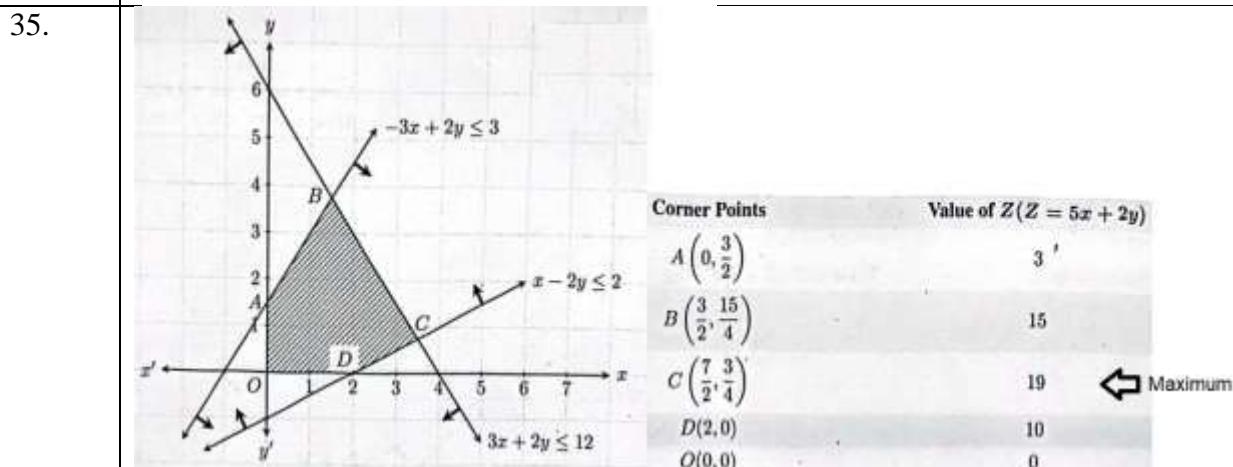
21.

$$\begin{aligned}
 &\tan^{-1}(1) + \cos^{-1}\left(-\frac{1}{2}\right) + \sin^{-1}\left(-\frac{1}{2}\right) \\
 &= \frac{\pi}{4} + \frac{2\pi}{3} - \frac{\pi}{6} \\
 &= \frac{3\pi + 8\pi - 2\pi}{12} = \frac{9\pi}{12} = \frac{3\pi}{4}
 \end{aligned}$$

1
1

28.

$$\begin{aligned}
 1 &= \sin^{-1} x \int x dx - \int \left\{ \left(\frac{d}{dx} \sin^{-1} x \right) \int x dx \right\} dx \\
 &= \sin^{-1} x \left(\frac{x^2}{2} \right) - \int \frac{1}{\sqrt{1-x^2}} \cdot \frac{x^2}{2} dx \\
 &= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \int \frac{-x^2}{\sqrt{1-x^2}} dx \\
 &= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \int \left\{ \frac{1-x^2}{\sqrt{1-x^2}} - \frac{1}{\sqrt{1-x^2}} \right\} dx \\
 &= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \int \left\{ \sqrt{1-x^2} - \frac{1}{\sqrt{1-x^2}} \right\} dx \\
 &= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \int \left\{ \int \sqrt{1-x^2} dx - \int \frac{1}{\sqrt{1-x^2}} dx \right\} \\
 &= \frac{x^2 \sin^{-1} x}{2} + \frac{1}{2} \left\{ \frac{x}{2} \sqrt{1-x^2} + \frac{1}{2} \sin^{-1} x - \sin^{-1} x \right\} + C \\
 &= \frac{x^2 \sin^{-1} x}{2} + \frac{x}{4} \sqrt{1-x^2} + \frac{1}{4} \sin^{-1} x - \frac{1}{2} \sin^{-1} x + C \\
 &= \frac{1}{4}(2x^2 - 1) \sin^{-1} x + \frac{x}{4} \sqrt{1-x^2} + C
 \end{aligned}$$



SET
C

