(1.) $A^2 = A$.

Only Possible when. $A = I$.

$A/q \quad 7A - (I+A)^3$.

$= 7I - (I+I)^3 \qquad (\because A = I)$

$= 7I - 8I$

$= -I$

(2.) $\begin{bmatrix} x-y & 2 \\ 2x-y & w \end{bmatrix} = \begin{bmatrix} -1 & 4 \\ 0 & 5 \end{bmatrix}$.

$x - y = -1$ — ①

$2x - y = 0$ — ②

From ② $\qquad$ In eqn ①

$2x = y \qquad x - 2x = -1$

$y = 2 \qquad x = 1$.

$\therefore x + y = 1 + 2 = 3$.

(3.) $\tan^{-1}x + \tan^{-1}y = \pi/4 \qquad xy < 1$.

taking tan On Bothsides.

$\tan(\tan^{-1}x + \tan^{-1}y) = \tan \pi/4$

$\frac{x+y}{1-xy} = 1$.

$x + y = 1 - xy$

$x + y + xy = 1$.

(4.) $\begin{vmatrix} 3x & 7 \\ -2 & 4 \end{vmatrix} = \begin{vmatrix} 8 & 7 \\ 6 & 4 \end{vmatrix}$

$3x \times 4 - 7 \times (-2) = 8 \times 4 - 7 \times 6.$

$12x + 14 = 32 - 42.$

$12x = -10 - 14$

$12x = -24$

$x = -2.$

(5.) $f(x) = \int_0^x t \sin t \, dt.$

Using integration By Parts.

$= (-t \cdot \cos t)\Big|_0^x + \int_0^x 1 \cdot \cos t \, dt.$

$= \{(-x \cos x) - (-0 \times \cos 0)\} + (\sin t)\Big|_0^x.$

$= -x\cos x - (\sin x - \sin 0)$

$= -x\cos x - \sin x$

(6.) $\vec{a} = 3\hat{i} + 2\hat{j} + 9\hat{k}$

$\vec{b} = \hat{i} - 2p\hat{j} + 3\hat{k}$

For being Parallel.

$\frac{3}{1} = \frac{2}{-2p} = \frac{9}{3}$

$\frac{3}{1} = \frac{-1}{p} = \frac{3}{1}$

$p = -1/3$

(8) Cartesian Eqn.

$$\frac{3-x}{5} = \frac{y+4}{7} = \frac{2z-6}{4} = \lambda$$

$$x = 3-5\lambda \qquad y = 7\lambda - 4 \qquad z = \frac{4}{2}\lambda + \frac{6}{2}$$

$$z = 2\lambda + 3$$

$\therefore$ vector eqn.

$$(x, y, z) = (3, -4, 3) + \lambda(-5, 7, 2).$$

7.) $R = \{(x, y) : x + 2y = 8\}$

Domain = R.

$$f(x) = \frac{8}{2} - \frac{x}{2} = 4 - x/2.$$

Given No. are Natural

But ~~the~~ here outcomes can be a Natural No, Whole No. or Fraction No., Integers . . .

$\therefore$ Range of the $f(x) = R$

(9.)

$$\int_0^a \frac{1}{4+x^2}\,dx = \frac{\pi}{8}.$$

$$= \left(\frac{1}{2}\tan^{-1}\frac{x}{2}\right)\Big|_0^a = \frac{\pi}{8}.$$

$$= \left(\tan^{-1}\frac{x}{2}\right)\Big|_0^a = \frac{\pi}{4}$$

$$\tan^{-1}\frac{a}{2} = \frac{\pi}{4}$$

$$\frac{a}{2} = 1.$$

(10.) $|\bar{a}+\bar{b}| = 13.$ $\qquad |\bar{a}| = 5$

$$|\bar{a}+\bar{b}|^2 = |\bar{a}|^2 + |\bar{b}|^2 + 2|\bar{a}||\bar{b}|\cos\theta.$$

$$(13)^2 = 25 + |\bar{b}|^2 + 2|\bar{a}||\bar{b}|\cos 90$$

$$169 - 25 = |\bar{b}|^2$$

$$|\bar{b}| = 12 .$$

Sec B

(11.) $(1+x^2)\dfrac{dy}{dx} + y = e^{\tan^{-1}x}.$

$$\frac{dy}{dx} + \frac{y}{1+x^2} = \frac{e^{\tan^{-1}x}}{1+x^2}.$$

$$P(x) = 1/_{1+x^2}$$

$$Q(x) = \frac{e^{\tan^{-1}x}}{1+x^2}$$

$$IF = e^{\int P(x)\,dx}$$

$$= e^{\int \frac{1}{1+x^2}\,dx}.$$

$$= e^{\tan^{-1}x + c}.$$

$$\therefore\ y \cdot e^{\tan^{-1}x} = \int \frac{e^{\tan^{-1}x}}{1+x^2} \cdot e^{\tan^{-1}x}\,dx.$$

Let $\tan^{-1}x = t$

$$\frac{1}{x^2+1}\,dx = dt.$$

$$y \cdot e^{\tan^{-1}x} = \int \frac{e^{2t}}{1}\,dt$$

$$= \frac{e^{2t}}{2} + k$$

$$y \cdot e^{\tan^{-1}x} = \frac{e^{2\tan^{-1}x}}{2} + c$$

$$y = \frac{e^{\tan^{-1}x}}{2} + c \cdot e^{-\tan^{-1}x}.$$

(12.)
OR

$$\bar{a} = \hat{i} + \hat{j} + \hat{k}$$

$$\bar{b} = 2\hat{i} + 4\hat{j} - 5\hat{k}$$

$$\bar{c} = \lambda\hat{i} + 2\hat{j} + 3\hat{k}$$

$$\bar{d} = \bar{b} + \bar{c} = (2+\lambda)\hat{i} + 6\hat{j} - 2\hat{k}$$

$$\hat{d} = \frac{\bar{d}}{|\bar{d}|} = \frac{(2+\lambda)\hat{i} + 6\hat{j} - 2\hat{k}}{\sqrt{(2+\lambda)^2 + 36 + 4}}$$

$$= \frac{(2+\lambda)\hat{i} + 6\hat{j} - 2\hat{k}}{\sqrt{\lambda^2 + 4\lambda + 44}}$$

$$\bar{a} \cdot \hat{d} = \left(\frac{(2+\lambda)\hat{i} + 6\hat{j} - 2\hat{k}}{\sqrt{\lambda^2 + 4\lambda + 44}}\right) \cdot (\hat{i} + \hat{j} + \hat{k})$$

$$1 = \frac{(\cancel{2}+\lambda) + (6) - \cancel{2}}{\sqrt{\lambda^2 + 4\lambda + 44}}$$

$$\cancel{\lambda^2} + 4\lambda + 44 = \cancel{\lambda^2} + 36 + 12\lambda.$$

$$8\lambda = 8.$$

$$\lambda = 1.$$

$$\therefore \hat{d} = \frac{\bar{b} + \bar{c}}{|\bar{b} + \bar{c}|} = \frac{3}{7}\hat{i} + \frac{6}{7}\hat{j} - \frac{2}{7}\hat{k}$$

(13.) $I = \int_0^{\pi} \frac{4x \sin x}{1+\cos^2 x}\, dx.$

Using king's

$$= \int_0^{\pi} \frac{4(\pi - x)\sin(\pi - x)}{1+\cos^2(\pi - x)}\, dx.$$

$$= 4\pi \int_0^{\pi} \frac{\sin x \, dx}{1+\cos^2 x} - \int_0^{\pi} \frac{4x \sin x}{1+\cos^2 x}\, dx$$

$$I = 4\pi \int_0^{\pi} \frac{\sin x \, dx}{1+\cos^2 x} - I.$$

Let $\cos x = t$.

$-\sin x \, dx = dt$.

$$\therefore\ 2I = -4\pi \int_{-1}^{1} \frac{dt}{1+t^2}$$

$$= -4\pi \left(\tan^{-1} t\right)\Big|_{-1}^{1}$$

Putting the value of t

$$= -4\pi \left(\tan^{-1}(\cos x)\right)\Big|_0^{\pi}$$

$$= -4\pi \left(\tan^{-1}(\cos \pi) - \tan^{-1}(\cos 0)\right)$$

$$I = -2\pi \left(\tan^{-1}(-1) - \tan^{-1}(1)\right)$$

$$= -2\pi \left(-\frac{\pi}{4} - \frac{\pi}{4}\right)$$

$$= \pi^2.$$

(14.)

$$y = [x(x-2)]^2$$

$$= [x^2 - 2x]^2$$

$$y = x^4 + 4x^2 - 4x^3$$

$$\frac{dy}{dx} = 4x^3 + 8x - 12x^2$$

$$= x(4x^2 - 12x + 8)$$

If, $\frac{dy}{dx} = 0$,

$x(4x^2 - 12x + 8) = 0$

Can only be possible when $x = 0$.

Because $D < 0$ of $(4x^2 - 12x + 8)$

$\therefore \cancel{\frac{d^2y}{dx^2}}$

As the given quadratic is always +ve than the fn. is always ↑.

(15.)

$f : R \to R$

$f(x) = x^2 + 2$

$g : R \to R$

$g(x) = \frac{x}{x-1}$. $x \neq 1$

$$fog(x) = \left(\frac{x}{x-1}\right)^2 + 2$$

$$fog(2) = \left(\frac{2}{1}\right)^2 + 2$$

$$= 4 + 2$$

$$= 6$$

$$gof(x) = \frac{x^2+2}{(x^2+2)-1}$$

$$gof(3) = \frac{9+2}{9+2-1}$$

$$= \frac{11}{10}$$

(16.)

$$\tan^{-1}\left(\frac{x-2}{x-4}\right) + \tan^{-1}\left(\frac{x+2}{x+4}\right) = \frac{\pi}{4}$$

taking tan on Both side.

$$\frac{\left(\frac{x-2}{x-4}\right) + \left(\frac{x+2}{x+4}\right)}{1 - \left(\frac{x-2}{x+4}\right)\cdot\left(\frac{x+2}{x+4}\right)} = 1.$$

$$\frac{\frac{(x-2)(x+4) + (x+2)(x-4)}{\cancel{(x^2-4^2)}}}{\frac{(x+4)(x-4) - (x-2)(x+2)}{\cancel{(x^2-4^2)}}} = 1$$

$$\frac{x^2 + \cancel{2x} - 8 + x^2 - \cancel{2x} - 8}{\cancel{x^2} - 16 - \cancel{x^2} + 4} = 1.$$

$$\cancel{12x^2 - 16 = 16}$$

$$\cancel{x^2 = 82}$$

$$2x^2 - 16 = -12$$

$$2x^2 = 4$$

$$x^2 = 2$$

$$x = \pm\sqrt{2}.$$

(18.)

$$y = Pe^{ax} + Qe^{bx}.$$

$$\frac{dy}{dx} = Pae^{ax} + Qbe^{bx}$$

$$\frac{d^2y}{dx^2} = Pa^2e^{ax} + Qb^2e^{bx}$$

$$\frac{d^2y}{dx^2} - (a+b)\frac{dy}{dx} + aby = 0.$$

$$LHS = Pa^2e^{ax} + Qb^2e^{bx} - Pa^2e^{ax} - Qabe^{bx} - Pabe^{ax} - Qb^2e^{bx} + Pabe^{ax} + Qabe^{bx}$$

$$= 0 = RHS.$$

(19.)

$$\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix} = abc + bc + ca + ab.$$

$$= \begin{vmatrix} a & 0 & 1 \\ -b & b & 1 \\ 0 & -c & 1+c \end{vmatrix}$$

$$= a(b + bc + c) + 1(bc - 0)$$

$$= ab + abc + ac + bc$$

$$= ab + bc + ca + abc.$$

(20.) $x = \cos t\,(3 - 2\cos^2 t)$

$= 3\cos t - 2\cos^3 t.$

$\frac{dx}{dt} = -3\sin t + 6\cos^2 t \cdot \sin t.$

$= -3\sin t + 3\cos t \cdot \sin 2t.$

$y = \sin t\,(3 - 2\sin^2 t).$

$= 3\sin t - 2\sin^3 t$

$\frac{dy}{dt} = 3\cos t - 6\sin^2 t \cdot \cos t.$

$= 3\cos t - 3\sin t \cdot \sin 2t.$

$\therefore \frac{dy}{dx} = \frac{3\cos t - 3\sin t \cdot \sin 2t}{-3\sin t + 3\cos t \cdot \sin 2t}$

$\left(\frac{dy}{dx}\right)_{x=\pi/4} = \frac{3 \times 1/\sqrt{2} - 3 \times 1/\sqrt{2} \cdot 1}{-3 \times 1/\sqrt{2} + 3 \times 1/\sqrt{2} \cdot 1}$

$= -\left\{ \frac{1/\sqrt{2} - 1/\sqrt{2}}{1/\sqrt{2} - 1/\sqrt{2}} \right\}$

$= -1.$

(21.) $\log\left(\frac{dy}{dx}\right) = 3x + 4y.$

$\frac{dy}{dx} = e^{3x+4y}.$

$\frac{dy}{dx} = e^{3x} \cdot e^{4y}$

$\frac{dy}{e^{4y}} = e^{3x}\,dx.$

$$\int e^{-4y}\,dy = \int e^{3x}\,dx.$$

$$\frac{e^{-4y}}{-4} = \frac{e^{3x}}{3} + c.$$

$$3e^{-4y} = -4e^{3x} - 4c$$

$$3e^{-4y} + 4e^{3x} = -4c.$$

Putting the value of x & y.

$x = 0$ & $y = 0$.

$$3\times 1 + 4\times 1 = -4\times c$$

$$7 = -4\times c$$

$$c = -7/4$$

$\therefore$ Particular Soln:

$\cancel{3/e^{4y}}$

$$3e^{-4y} + 4e^{3x} = 7$$

$\cancel{4e^{3x} + 3}$

$$4e^{3x}\cdot e^{4y} + 3 = 7e^{4y}.$$

$$4e^{3x+4y} + 3 = 7e^{4y}$$

(22.)

$$l_1 = \frac{1-x}{3} = \frac{7y-14}{2p} = \frac{z-3}{2}.$$

$$l_2 = \frac{7-7x}{3p} = \frac{y-5}{1} = \frac{6-z}{5}$$

Given Point. $P(3,2,-4)$.

Dir. Cosines;

line $l_1 = (3, p, 2)$

line $l_2 = (3p, 1, 5)$.

Given that Both of the lines are $\perp$.

$\therefore$ $(\text{Dir. cosine})_{l_1} \cdot (\text{Dir cosine})_{l_2} = 0$.

$(3, p, 2) \cdot (3p, 1, 5) = 0$

~~9p+p+10=0~~

$9p + p + 10 = 0$

$10p = -10$

$p = -1$

$\therefore$ dir cosine of line $l_1 = (3, -1, 2)$.

dir. cosine of line $l_2 = (-3, 1, 5)$.

Req. eqn of line $= (3, 2, -4) + \lambda(3, -1, 2)$.

SEC-3.

$$m = \frac{4-5}{3-1} = \frac{-1}{2}.$$

(17). As given in question.

$$P(S) = 3\,P(F).$$

Let $P(F)$ be $1/4$

$$\therefore\ P(S) = 3/4.$$

Using Bernauli. Theorem;

$$^{n}C_{r}\,(P(F))^{r}\,(P(S))^{n-r}.$$

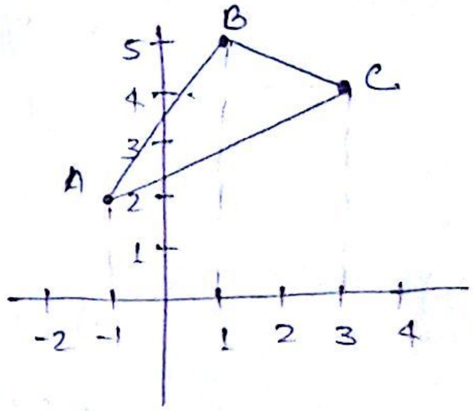
$$P(\underline{\text{Getting} \geq 3S}) = {}^{5}C_{3}\,(P(F))^{3}.(P.(S))^{2} + {}^{5}C_{4}\,(P(F))^{4}.(P(S))^{1} + {}^{5}C_{5}\,(P(F))^{5}.$$

$$= {}^{5}C_{3}\left(\tfrac{1}{4}\right)^{3}.\left(\tfrac{3}{4}\right)^{2} + {}^{5}C_{4}\left(\tfrac{1}{4}\right)^{4}.\left(\tfrac{3}{4}\right)^{1} + {}^{5}C_{5}\left(\tfrac{1}{4}\right)^{5}$$

$$= (90 + 15 + 1)\ \tfrac{1}{4^{5}}$$

$$= \frac{106}{1024} = 53/513.$$

(24.) 2. $(-1,2)$; $(1,5)$; $(3,4)$.



Eq. of AB.

$$m = \frac{5-2}{1+1} = 3/2.$$

$$(y-5) = \frac{3}{2}(x-1)$$

$$y = \frac{3x}{2} + \frac{7}{2}$$

Eq. of BC.

$$m = \frac{4-5}{3-1} = \frac{-1}{2}.$$

$$(y-4) = -\frac{1}{2}(x-3)$$

$$y = -\frac{x}{2} + \frac{5}{2}$$

Eq. of CA.

$$m = \frac{2-4}{-1-3} = +2/+4 = 1/2.$$

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

$$y = x/2 + 3/2$$

$$= \int_{-1}^{1}\left(\frac{3x}{2} + \frac{7}{2}\right)dx + \int_{1}^{3}\left(-\frac{x}{2} + \frac{5}{2}\right)dx - \int_{-1}^{3}\left(x/2 + 3/2\right)dx.$$

$$= \frac{3}{4}(1-1) + \frac{7}{2}(1+1) - \frac{1}{4}(9-1) + \frac{5}{2}(3-1)$$

$$- \frac{1}{4}(9-1) - \frac{3}{2}(3+1)$$

$= 7 + 2 + 5 - 2 - 6$

$= 14 - 8 = 6$ sq. unit.

25.)

	Fab.	Fin.	Profit.
A (x)	9	1.	₹ 80
B (y)	12	3	₹ 120.
	180	30.	

$9x + 12y = 180$

$x + 3y = 30.$

$R = 80x + 120y$

$9x + 27y = 270$

$9x + 12y = 180$

$15y = 90$

$y = \cancel{18}\,6.$

$x = 30 - \cancel{16} \times 3$

$= 30 - \cancel{8}18$

$= \underline{22}$

$x = 30 - 6 \times 3.$

$= 30 - 18.$

$= \underline{12}$

x	12	0	30	0	20.
y	6	10	0	15	0

Max. Profit.

$(0,10)$ $\qquad R = 80\times 0 + 120\times 10$

$= 1200.$

$(12,6)$ $\qquad R = 80\times 12 + 120\times 6$

$= 960 + 720 = 1680$

$(20,0)$ $\qquad R = 80\times 20 + 120\times 0$

$= 1600$

$12 \longrightarrow A.$

$6 \longrightarrow B.$

(26.)

$Co_1.$	$Co_2.$	$Co_3.$
H T	H H	T H
$\uparrow$	$\uparrow$	$\uparrow$
75% H	$P(H) = 1$	40% T.

$P(H) = \frac{75}{100} = \frac{3}{4}.$

$P(T) = P(Co_3) = \frac{2}{5}$

$P(H) = \frac{3}{5}$

$P(\text{Coin}) = \frac{1}{3}.$

$$P(H_2) = \frac{\frac{1}{3}\times 1}{\frac{3}{4}\times\frac{1}{3} + \frac{1}{3}\times\frac{1}{1} + \frac{3}{5}\times\frac{1}{3}}.$$

$$= \frac{1/\cancel{3}}{\frac{15+20+12}{\cancel{60}\,20}}.$$

$$= \frac{20}{47}$$

(27.)

$$\begin{array}{cc} & \begin{array}{ccc} \text{Sin.} & \text{Try} & \text{Help} \end{array} \\ \begin{array}{c} \\ A \\ B \end{array} & \begin{bmatrix} 1 & 1 & 1 \\ 3 & 2 & 1 \\ 4 & 1 & 3 \end{bmatrix} \end{array} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 900 \\ 1600 \\ 2300 \end{bmatrix}$$

$$A = \begin{bmatrix} 1 & 1 & 1 \\ 3 & 2 & 1 \\ 4 & 1 & 3 \end{bmatrix}$$

$$A^{-1} = \frac{1}{|A|} \text{adj } |A|$$

$$|A| = \begin{vmatrix} 1 & 1 & 1 \\ 3 & 2 & 1 \\ 4 & 1 & 3 \end{vmatrix} = 1(6-1) - 1(9-4) + 1(3-8)$$

$$= 5 - 5 + (-5)$$

$$= \underline{-5}$$

$$\text{adj } |A| = \begin{bmatrix} 5 & -2 & -1 \\ -5 & -1 & +2 \\ -5 & +3 & -1 \end{bmatrix}$$

$Co(1,1) = 6-1 = 5$

$Co(2,1) = 9-4 = 5$

$Co(3,1) = 3-8 = -5$

$Co.(1,2) = 3-1 = 2.$

$Co(2,2) = (3-4) = -1.$

$Co(3,2) = 1-4 = -3.$

$Co(1,3) = 1-2 = -1$

$Co(2,3) = 1-3 = -2$

$Co.(3,3) = (2-3)$
$= -1.$

$$A^{-1} = \begin{bmatrix} -1 & +2/5 & 1/5 \\ 1 & 1/5 & -2/5 \\ 1 & -3/5 & 1/5 \end{bmatrix}$$

Now

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} -1 & 2/5 & 1/5 \\ 1 & 1/5 & -2/5 \\ 1 & -3/5 & 1/5 \end{bmatrix} \begin{bmatrix} 900 \\ 1600 \\ 2300 \end{bmatrix}$$

$$= \begin{bmatrix} -900 + 640 + 460 \\ 900 + 320 - 920 \\ 900 - 960 + 460 \end{bmatrix}$$

$$= \begin{bmatrix} 200 \\ 300 \\ 400 \end{bmatrix}.$$

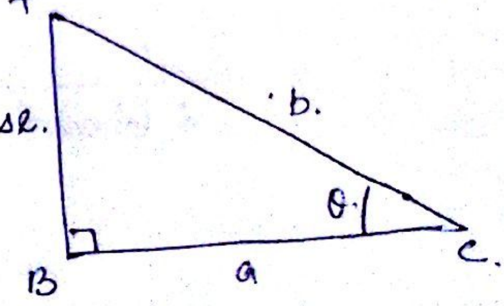
$x =$ ₹200

$y =$ ₹300

$z =$ ₹400.

Another value should be decipline.

(28.) Given :- Sum of a side and the hypotanuse.



To Prove :- Max. Area of Δ will be only when Angle Between them is $60°$

Proof: $A = \frac{1}{2} ab \sin\theta$.

$$\left[\frac{dA}{d\theta}\right]_{\pi/3} = \frac{1}{2} ab \cos\theta.$$

$$\frac{d^2A}{d\theta^2} = -\frac{1}{2} ab \sin\theta.$$

$$\left.\frac{d^2A}{d\theta^2}\right]_{\theta=\pi/3} = -\frac{1}{2} ab \frac{\sqrt{3}}{2}$$

$$= \frac{-\sqrt{3}.ab}{4} < 0.$$

$\therefore$ At $\theta = \pi/3$ area is maximum.

(23)
=.

Given Planes;

$$x+y+z=1.$$

$$2x+3y+4z=5$$

Eq. of Plane Passing through line of int.

$$(1+2\lambda)x+(1+3\lambda)y+(1+4\lambda)z=1+5\lambda.$$

It is ⊥ to Plane.

$$x-y+z=0.$$

∴ Scaler Product of the dir cosine

$$(1+2\lambda).1+(1+3\lambda).(-1)+(1+4\lambda).1=0$$

$$\cancel{1}+2\lambda+\cancel{(-1)}-3\lambda+1+4\lambda=0$$

$$3\lambda+1=0$$

$$\lambda=-1/3$$

∴ Eq. of Plane =

$$\left(1-\tfrac{2}{3}\right)x+\left(1-\tfrac{3}{3}\right)y+\left(1+4\times -\tfrac{1}{3}\right)z=1+5\times\tfrac{-1}{3}$$

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

∴ Distance Between the Plane & Origin.

$$d=\left|\frac{0+0+0+2/3.}{\sqrt{1/9+0+1/9}}\right|$$

$$=\left|\frac{2/\cancel{3}.}{\sqrt{2}/\cancel{3}}\right|=\sqrt{2}.\text{ units.}$$

(29). $\int \frac{1}{\sin^4 x + \sin^2 x \cdot \cos^2 x + \cos^4 x} dx.$

$= \int \frac{\sec^4 x}{\tan^4 x + \tan^2 x + 1} dx.$

Let $\tan x = t$

$= \int \frac{\sec^2 x \, dt}{t^4 + t^2 + 1.}$

$= \sec^2 x \int \frac{1}{t^4 + t^2 + 1} dt.$

$= . \sec^2 x \int \frac{1}{\left(t^2 + \frac{1}{2}\right)^2 + \frac{3}{4}} dt$ Using. $\int \frac{1 \, dx}{x^2 + a^2} = \frac{1}{a} \tan^{-1} \frac{x}{a} + c.$

$= . \sec^2 x \left\{ \frac{2}{\sqrt{3}} \tan^{-1}\left(\frac{t^2 + \frac{1}{2}}{\sqrt{3}/2}\right)\right\} + c.$

$= \frac{2 \sec^2 x}{\sqrt{3}} \tan^{-1}\left(\frac{2t^2 + 1}{\sqrt{3}}\right) + c$

Putting the value of t.

$=. \frac{2 \sec^2 x}{\sqrt{3}} \tan^{-1}\left(\frac{2\tan^2 x + 1}{\sqrt{3}}\right) + c.$

$= \frac{2 \sec^2 x}{\sqrt{3}} \tan^{-1}\left(\frac{\tan^2 x + \sec^2 x}{\sqrt{3}}\right) + c$