JEE Main 2022 (June) Chapter-wise Qs Bank

Questions MathonGo

/// mgthongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

Let a line having direction ratios 1, -4, 2 intersect

Space for your notes: the lines $\frac{x-7}{mathons} = \frac{y-1}{mathons} = \frac{z+2}{mathons}$ and $\frac{x}{2} = \frac{y-7}{3} = \frac{z}{1}$ mathons /// mathons

at the point A and B. Then $(AB)^2$ is equal to _____. mathongo /// mathongo /// mathongo

02 - 24 June - Shift 2". mathongo ///. mathongo ///. mathongo ///. mathongo

If the shortest distance between the lines Space for your notes:

$$\frac{x-1}{\sqrt{2}} = \frac{y-2}{\sqrt{3}} = \frac{z-3}{\sqrt{3}} \text{ and } \frac{x-2}{\sqrt{4}} = \frac{y-4}{\sqrt{5}} = \frac{z-5}{\sqrt{5}}$$
 mathongo /// mathongo /// mathongo

is
$$\frac{1}{\sqrt{3}}$$
, then the sum of all possible values of λ is : not proposed in the sum of all po

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nath one Space for your notes: // mathongo

Let the points on the plane P be equidistant from the points (-4, 2, 1) and (2, -2, 3). Then the acute angle between the plane P and the plane 2x + y + athongo /// mathongo /// mathongo

$$3z = 1$$
 is mathongo

/// mathongo /// matho
$$\frac{\pi}{(B)}$$

(A)
$$\frac{\pi}{6}$$
 athongo

(B)
$$\frac{\pi}{4}$$

$$\frac{(A)}{6} \frac{\pi}{6}$$
 (B) $\frac{\pi}{4}$ mathongo /// mathongo /// mathongo /// mathongo /// mathongo

(C)
$$\frac{\pi}{3}$$
 thongo

matho(D)
$$\frac{5\pi}{12}$$
 mathon

(C)
$$\frac{\pi}{3}$$
 mathongo /// mathongo /// mathongo /// mathongo /// mathongo

Questions MathonGo

Let Q be the mirror image of the point at page for your notes: " mathongo P(1, 0, 1) with respect to the plane S: x + y + z = 5. If a line L passing through the line with the line (1, -1, -1), parallel to the line PQ meets the plane S at R, then QR² is equal to: (A) n_2 athong m_2 mathong m_2 mathon m_2 mathon (C) n7athongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo Let the lines mathongo /// mathongo /// mathongo Space for your notes: /// mathongo L_1 : $\vec{r} = \lambda(\hat{i} + 2\hat{j} + 3\hat{k}), \lambda \in \mathbb{R}$ intersect at the point S. If a plane ax + by - z mathongo w mathongo + d = 0 passes through S and is parallel to both the lines L_1 and L_2 , then the value of $a+b+\cdots$ mathongo /// mathongo d is equal to /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo 06 - 25 June - Shift 2". mathongo //. mathongo //. mathongo //. mathongo

Questions MathonGo

Let P be the plane passing through the intersection at Space for your notes: of the planes //. mathongo ///. mathongo ///. mathongo ///. mathongo $\vec{r} \cdot (\hat{i} + 3\hat{j} - \hat{k}) = 5$ and $\vec{r} \cdot (2\hat{i} - \hat{j} + \hat{k}) = 3$, and the mathongo ///. mathongo ///. mathongo ///. mathongo point (2,1,-2). Let the position vectors of the mathongo points X and Y be $\hat{i}-2\hat{j}+4\hat{k}$ and $5\hat{i}-\hat{j}+2\hat{k}$ mathongo M mathongo M mathongo respectively. Then the points /// mathongo /// mathongo /// mathongo /// mathongo (A) X and X + Y are on the same side of P mathongo mathongo mathongo (B) Y and Y - X are on the opposite sides of P ///. mathongo ///. mathongo (C) X and Y are on the opposite sides of P (D) X+Y and X - Y are on the same side of P/ math ongo // mathongo // mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo Let l_1 be the line in xy-plane with x and y space for your notes: intercepts $\frac{1}{8}$ and $\frac{1}{4\sqrt{2}}$ respectively, and l_2 be the athongo /// mathongo /// mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo $\frac{1}{6\sqrt{3}}$ respectively. If d is the shortest distance mathongo /// mathongo /// mathongo /// mathongo /// mathongo between the line l_1 and l_2 , then d^{-2} is equal to _____ mathongo ____ mathongo

/// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

JEE Main 2022 (June) Chapter-wise Qs Bank

Questions MathonGo

If the two lines $l_1: \frac{x-2}{3} = \frac{y+1}{-2}$, z = 2 and Space for your notes:

mathongo ///. mathongo ///. mathongo ///. mathongo $l_2: \frac{x-1}{m1 \text{thongo } \alpha \text{///}} = \frac{z+5}{m2 \text{perpendicular, then an}} \text{ perpendicular, then an mathongo } \text{///} \text{ mathongo }$

angle between

between the lines l_2 and mathongo we mathongo with mathon with mathon

 $l_3: \frac{1-x}{m^3 \text{thongo}} = \frac{2y-1}{m^4 \text{thongo}} = \frac{z}{m^4 \text{thongo}} \text{ is : }$ mathongo /// mathongo /// mathongo /// mathongo

(A) $\cos^{-1}\left(\frac{29}{4}\right)$ matho(B) $\sec^{-1}\left(\frac{29}{4}\right)$ mathongo /// mathongo /// mathongo

 $\begin{array}{c} \text{mathongo} \\ \text{(C)} \\ \text{cos}^{-1} \\ \text{29} \end{array} \\ \begin{array}{c} \text{(D)} \\ \text{mathongo} \\ \text{mathongo} \\ \text{mathongo} \end{array} \\ \begin{array}{c} \text{mathongo} \\ \text{mathongo$

/// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

Let the plane 2x + 3y + z + 20 = 0 be rotated

Space for your notes:

through a right angle about its line of intersection mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

with the plane x - 3y + 5z = 8. If the mirror image

B(a,b,c), then : mathongo /// mathongo /// mathongo /// mathongo

(A) $\frac{a}{c} = \frac{b}{c} = \frac{c}{\sqrt{a}}$ matho(B) $\frac{a}{a} = \frac{b}{c} = \frac{c}{\sqrt{a}}$ mathongo /// mathongo /// mathongo

 $\begin{array}{c} \text{mathango} \\ \text{(C)} \\ \frac{a}{8} = \frac{b}{-5} = \frac{c}{4} \\ \text{mathango} \\ \text{mathango$

Q10+26 June+Shift 2 mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

JEE Main 2022 (June) Chapter-wise Qs Bank

Questions MathonGo

If the plane 2x + y - 5z = 0 is rotated about its line of Space for your notes: of intersection with the plane 3x - y + 4z - 7 = 0

///. mathongo ///. mathongo ///. mathongo ///. mathongo by an angle of $\frac{\pi}{2}$, then the plane after the rotation mathongo /// mathongo /// mathongo /// mathongo /// mathongo ///

passes through the point:

(A)
$$(2, -2, 0)$$

(B)
$$(-2, 2, 0)$$

$$(D) (10 2)$$

mathongo (B)
$$(-2, 2, 0)$$
 mathongo (M. mathongo (M. mathongo)

(D)
$$(-1, 0, -2)$$

(C)
$$(1,0,2)_{10}$$
 /// matho(D) $(-1,0,a2)_{0}$ mg /// mathongo /// mathongo /// mathongo

/// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

If the onlines
$$\vec{r} = (\hat{i} - \hat{j} + \hat{k}) + \lambda (3\hat{j} - \hat{k})$$
 and an expace for your notes: mathongo

 $\vec{r} = (\alpha \hat{i} - \hat{j}) + \mu(2\hat{i} - 3\hat{k})$ are co-planar, then distance at longo /// mathongo

of the plane containing these two lines from the mathongo mathongo mathongo mathongo mathongo point $(\bullet, 0, 0)$ is:

 r_2 athongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

(B) 11(A) 9

mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

(C) 11 mathongo /// mathongo /// mathongo /// mathongo /// mathongo

mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

If two straight lines whose direction cosines are Space for your notes: given by the relations 1 + m - n = 0, $31^2 + m^2 + cnl$ = 0 are parallel, then the positive value of c is: " math ongo | mathongo | m

(A) 6 mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

Q13 - 27 June - Shift 1 mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

JEE Main 2022 (June) Chapter-wise Qs Bank

Questions MathonGo Let the mirror image of the point (a, b, c) with a Space for your notes: respect to the plane 3x - 4y + 12z + 19 = 0 be mathongo mathong (a- 6, β , γ). If a + b + c = 5, then 7 β - 9 γ is equal tiji mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo Q14 - 27 June - Shift 2 Let the foot of the perpendicular from the point Space for your notes: (1, 2, 4) on the line $\frac{x+2}{4} = \frac{y-1}{2} = \frac{z+1}{3}$ be P. Then mathons with mathons with mathons of the line $\frac{x+2}{4} = \frac{y-1}{2} = \frac{z+1}{3}$ the modistance // of oth Pigo from not the go plane oth pigo // mothongo // mothongo 3x + 4y + 12z + 23 = 0 $^{\prime\prime\prime\prime}$ mathongo $^{\prime\prime\prime\prime}$ mathongo $^{\prime\prime\prime\prime}$ mathongo $^{\prime\prime\prime\prime}$ mathongo $^{\prime\prime\prime\prime}$ mathongo (A)5(B) 13 mathongo /// mathongo /// mathongo (C) 4(D)13 mathongo ///. mathongo ///. mathongo ///. mathongo Q15-27 June - Shift 2 mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo The shortest distance between the lines $\frac{x-3}{2} = \frac{y-2}{3} = \frac{z-1}{-1}$ and $\frac{x+3}{2} = \frac{y-6}{1} = \frac{z-5}{3}$ is: mathongo mathongo /// mathongo /// mathongo (B) mathongo ///. mathongo ///. mathongo ///. mathongo (D) $6\sqrt{3}$ mathongo ///. mathongo ///. mathongo ///. mathongo 016-28 June-Shift 1 mathongo ///. mathongo ///. mathongo ///. mathongo

Questions MathonGo

If two distinct point Q, R lie on the line of at Space for your notes: intersection of the planes -x + 2y - z = 0 and mathongo /// mathong point P is (1, -2, 3), then the area of the triangle $\frac{1}{2}$ mathongo $\frac{1}{2}$ mathongo PQR is equal to /// mathongo /// mathongo /// mathongo /// mathongo (A) $\frac{2}{3}\sqrt{38}$ mathongo /// mathongo /// mathongo /// mathongo (C) $\frac{8}{3}\sqrt{38}$ ngo /// mathongo /// mathongo /// mathongo /// mathongo **Q17 - 28 June - Shift 1** The acute angle between the planes P_1 and P_2 , P_1 P_2 P_3 P_4 P_4 P_4 P_4 P_5 P_6 P_6 Space for your notes: when P₁ and P₂ are the planes passing through the intersection of the planes 5x + 8y + 13z - 29 = 0 mathongo /// mathongo /// mathongo and 8x + 7y + z - 20 = 0 and the points (2, 1, 3) at longo /// mathongo /// mathongo and (0, 1, 2), respectively, is ____ mathongo ____ mathongo ____ mathongo (A) $\frac{\pi}{3}$ athongo /// matho(B) $\frac{\pi}{4}$ // mathongo /// mathongo /// mathongo mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo Mathongo /// mathongo 12/2 mathongo /// mathongo /// mathongo /// mathongo Q18 + 28 June + Shift 1' mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

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JEE Main 2022 (June) Chapter-wise Qs Bank

Questions MathonGo

Let the plane $P: \vec{r} \cdot \vec{a} = d$ contain the line of all space for your notes:

intersection of two planes $\vec{r} \cdot (\hat{i} + 3\hat{j} - \hat{k}) = 6$ and at mathongo mathongo

the point $(2, 3, \frac{1}{2})$, then the value of $\frac{|13\vec{a}|^2}{d^2}$ is mathogo /// mathogo /// mathogo

". mathongo | matho equal to

(A) 90 Ithongo /// matho(B) 93 // mathongo /// mathongo /// mathongo

Q19 + 28 June + Shift 2 mathongo ///. mathongo ///. mathongo ///. mathongo

and is perpendicular to the planes 2x + y - 5z = 10Space for your notes:

mathons

Another than the planes 2x + y - 5z = 10

If a, b, c, d are integers d > 0 and gcd (lal, lbl, lcl, d)

= 1, then the value of a + 7b + c + 20d is equal to

(A) 18 thongo ///. matho(B) 20 // mathongo ///. mathongo ///. mathongo

(C) 24

Q20 - 28 June - Shift 2 mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

Let the image of the point P(1, 2, 3) in the line

 $L: \frac{x-6}{3} = \frac{y-1}{2} = \frac{z-2}{3} \text{ be Q. let } R\left(\alpha,\beta,\gamma\right) \text{ be}$ $\text{mathongo} \text{ mathongo} \text{ mathong$

a point that divides internally the line segment PQ

in the ratio 1 : 3. Then the value of $22(\alpha+\beta+\gamma)$ mathongo /// mathongo

is equal tongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

O21 - 29 June - Shift 1

 $\vec{r} \cdot (-6\hat{i} + 5\hat{j} - \hat{k}) = 7$. If the plane P passes through at longo /// mathongo

(C) 95 mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

and 3x + 5y - 7z = 12; thongo /// mathongo /// mathongo /// mathongo

mathongo /// mathongo /// mathongo

(C) 24 (D) 22 (Mathongo Mathongo Mathon

Space for your notes:

Questions MathonGo

If the mirror image of the point (2, 4, 7) in the at space for your notes: plane 3x - y + 4z = 2 is (a, b, c), the 2a + b + 2c is nathongo ///. mathongo ///. mathongo equal to: (C) m_6 thongo m matho(D) m mathongo m mathongo m mathongo m mathongo **Q22 - 29 June - Shift 1** Let d be the distance between the foot of Space for your notes: perpendiculars of the points P(1, 2-1) and Q(2, -1)1, 3) on the plane -x + y + z = 1. Then d^2 is equal mathongo /// mathongo /// mathongo to mathongo /// mathongo /// mathongo /// mathongo /// mathongo mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo **Q23 - 29 June - Shift 1** Let $P_1: \vec{r}.(2\hat{i}+\hat{j}-3\hat{k})=4$ be a plane. Let P_2 be a Space for your notes: another plane which passes through the points (2, --ath-ongo /// mathongo /// mathongo (3, 2) (2, -2, -3) and (1, -4, 2). If the direction mathons we mathons ratios of the line of intersection of P₁ and P₂ be 16,

mathongo // mathongo // mathongo // mathongo // mathongo // mathongo α , β , then the value of $\alpha + \beta$ is equal to ____ ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo Q24+29 June+Shift 2 mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

Questions MathonGo

Let
$$\frac{x-2}{3} = \frac{y+1}{-2} = \frac{z+3}{-1}$$
 lie on the plane $px - qy + \frac{y+1}{2} = \frac{z+3}{-1}$ lie on the plane $px - qy + \frac{y+1}{2} = \frac{z+3}{-1}$

z=5, for some $p,\ q\in\mathbb{R}$. The shortest distance of

the plane from the origin is: o /// mathongo /// mathongo /// mathongo /// mathongo

(A)
$$\sqrt{\frac{3}{109}}$$
 ngo /// matho(B) $\sqrt{\frac{5}{142}}$ nathongo /// mathongo /// mathongo

W. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

Let Q be the mirror image of the point
$$P(1, 2, 1)$$
with respect to the plane $x + 2y + 2z = 16$. Let T be

mathongo ///. mathongo ///. mathongo a plane passing through the point Q and contains

of the following points lies on
$$T$$
?

// mathongo //

(C)(1, 2, 2)

#MathBoleTohMathonGo

JEE Main 2022 (June) Chapter-wise Qs Bank

Questions MathonGo										
Answer Ke										
Q1 (84)		Q2 (A)		Q3 (C)		Q4	` ′			
/// mathongo										
Q5 (5) /// mathongo				Q7 (51) mathongo			` ′			
Q9 (A)		Q10 (C)		- \ /			2 (A)			
Q13 (137) /// mathongo				Q15 (A)			6 (B)			
Q17 (A)				Q19 (D)) (12.			
///. mathongo		- \ /		- \ /		_		· *		
Q21 (C)		- \ /		Q23 (28	1	_	4 (B)			
Q25 (B) /// mathongo										
			14.	mathongo #MathBoleTo	ohM	mathongo athonGo				

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo mathongo /// mathongo /// mathongo /// mathongo /// mathongo mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo $B(2\mu, 3\mu + 7, \mu)$ athongo ///. mathongo ///. mathongo ///. mathongo DR's of ABongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo $(3\lambda - 2\mu + 7, -\lambda - 3\mu - 6, \lambda - \mu - 2)$ $\frac{3\lambda - 2\mu + 7}{1} = \frac{-\lambda - 3\mu + 6}{-4} = \frac{\lambda + \mu + 2}{2}$ mathongo /// mathongo /// mathongo Taking first (2) $-12\lambda + 8\mu - 28 = -\lambda - 3\mu - 6$ mathongo ///. mathongo ///. mathongo ///. $\lambda - \mu + 2 = 0$ Taking athong second matho &go ///. thirdnongo ///. mathongo ///. mathongo ///. mathongo $-2\lambda - 6\mu - 12 = -4\lambda + 4\mu + 8$ χ'_{-5} μ = 0After solving above two equation $\lambda = -5, \mu = -3$ o ///. mathongo ///. mathongo ///. mathongo ///. mathongo A = (-8, 6, 7)B = (-6, -2, -3)**Q2 (A)** #MathBoleTohMathonGo

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo

Mathongo SHORTEST distance
$$\frac{\left|(a_2-a_1)\cdot(b_1\times b_2)\right|}{\left|b_1\times b_2\right|}$$
 mathongo /// mathongo //

$$\vec{b}_2 = \hat{i} + 4\hat{j} + 5\hat{k}$$
mathongo /// mathongo //

S.D. =
$$\frac{1}{1}$$
 mathongo /// mathongo // mathong

$$\vec{b}_{1} \times \vec{b}_{2} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ \hat{b}_{1} \times \vec{b}_{2} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 2 & 3 & \lambda \\ 1 & 4 & 5 \end{vmatrix}$$
 /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

$$=(15-4\lambda)\hat{i}+(\lambda-10)\hat{j}+5\hat{k}$$
ongo /// mathongo /// mathongo /// mathongo /// mathongo

$$|\vec{\mathbf{b}}_1 \times \vec{\mathbf{b}}_2| = \sqrt{(15 - 4\lambda)^2 + (\lambda - 10)^2 + 25}$$

Now

S.D. =
$$\frac{\left|\left(\hat{\mathbf{i}} + 2\hat{\mathbf{j}} + 2\hat{\mathbf{k}}\right) \cdot \left[\left(15 - 4\lambda\right)\hat{\mathbf{i}} + (\lambda - 10)\hat{\mathbf{j}} + 5\hat{\mathbf{k}}\right]\right|}{\sqrt{(15 - 4\lambda)^2 + (\lambda - 10)^2 + 25}}$$
 mathongo /// mathongo // mathongo

$$\frac{1}{\sqrt{(15-4\lambda)^2+(\lambda-10)^2+25}} = \frac{1}{\sqrt{3}}$$
wathongo /// mathongo // mathongo //

square both side

$$3(5-2\lambda)^2 = 225 + 16\lambda^2 - 120\lambda + \lambda^2 + 100 - 20\lambda + 25$$
 mathongo /// mathongo /// mathongo /// mathongo

$$5\lambda^2 - 80\lambda + 275 = 0$$
 mathongo /// mathongo /// mathongo /// mathongo /// mathongo

$$\begin{array}{c} (\lambda-5)\,(\lambda-11)=0\\ \text{mathongo}\\ \Rightarrow \lambda=5,\,11 \end{array} \qquad \text{mathongo} \qquad \text{mathongo} \qquad \text{mathongo} \qquad \text{mathongo}$$

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo thongo \mathbb{R}^{2} mathongo \mathbb{R}^{2} mathongo \mathbb{R}^{2} mathongo \mathbb{R}^{2} mathongo \mathbb{R}^{2} mid point = (-1, 0, 2)hathongo ///. mathongo ///. mathongo ///. mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo Normal vector = $\overrightarrow{AB} = (\overrightarrow{OB} - \overrightarrow{OA})$ /// mathongo $P \equiv 3(x+1)-2(y)+1$ (z-2) = 0 /// mathongo /// mathongo /// mathongo $P \equiv 3x - 2y + z + 1 = 0$ mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo $P' \equiv 2x + y + 3z - 1 = 0$ mathongo ma mathongo ///. mathongo ///. mathongo ///. mathongo $\frac{\theta = \cos^{-1}\left(\frac{6-2+3}{\sqrt{14}\times\sqrt{14}}\right)}{\sqrt{14}\times\sqrt{14}}$ mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo $\theta = \cos^{-1}\left(\frac{7}{14}\right) = \cos^{-1}\left(\frac{1}{2}\right) = \frac{\pi}{3}$ /// mathongo /// mathongo /// mathongo Option C is correct. // mathongo /// mathongo /// mathongo /// mathongo /// mathongo (4/8) athongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo p_{1001} ongo ///. mathongo ///. mathongo ///. mathongo // mathongo mathongo /// mathongo /// mathongo /// mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo Let parallel vector of $L = \vec{b}$ /// mathongo // matho $\frac{4 - 1}{1} = \frac{6 \pm 0}{1} = \frac{6 - 1}{1} = \frac{-2(2 \pm 5)}{3}$ mathongo ///. mathongo ///. mathongo a''=3, $b^{\dagger}=2$, c=3'' mathongo ///. mathongo ///. mathongo ///. mathongo Q=(3, 2, 3)mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo so, b = (1,1,1)Equation of line ///. mathongo ///. mathongo ///. mathongo ///. mathongo L: $\frac{x-1}{m_1} \frac{y+1}{m_2} = \frac{z+1}{m_1}$ mathongo ///. mathongo ///. mathongo ///. mathongo Let point R, $(\lambda + 1, \lambda - 1, \lambda + 1)_{190}$ /// mathongo /// mathongo /// mathongo lying on plane x + y + z = 5, $3\lambda - 1 = 5$ /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo $\lambda = 2$ mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo Point R is (3, 1, 1) $QR^2 = 5$ Ans. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo $_{05}^{\prime\prime\prime}$ mathongo $^{\prime\prime\prime}$ mathongo $^{\prime\prime\prime}$ mathongo $^{\prime\prime\prime}$ mathongo $^{\prime\prime\prime}$ mathongo $^{\prime\prime\prime}$ mathongo #MathBoleTohMathonGo

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo Both the lines lie in the same plane mathongo mathongo mathongo mathongo nathongo ///. mathongo ///. mathongo ///. mathongo <1,2,3> mathongo ///. mathongo ///. mathongo ///. mathongo ongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo (0,0,0)equation of the plane $\begin{vmatrix} x & y & z \\ 1 & n2ath3 \\ 1 & 5 \end{vmatrix} = 0$ ///// mathongo ///// mathongo ///// mathongo ///// mathongo \Rightarrow $7x^{a+1}2y_{a-1}z'=0$ athongo ///. mathongo ///. mathongo ///. mathongo a + b + d = 5 \Rightarrow $(x+3y-z-5)+\lambda(2x-y+z-3)=0$ nongo /// mathongo /// mathongo /// (2,1,-2) lies on this plane $\therefore \lambda = 1 \Rightarrow \text{plane is } 3x + 2y - 8 = 0$ 07 (51) 1/1 mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo #MathBoleTohMathonGo

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Hints and Solutions MathonGo										
$8x + 4\sqrt{2}y = 1, z = 0$										
///. mathongo ///. mathongo ///. mat										
$\Rightarrow \frac{x}{1} = \frac{y-0}{\sqrt{2}} = \frac{z-0}{2} = \lambda$	thongo ///.									
/// mathongo /// mathongo /// mathongo										
$-8x - 6\sqrt{3}z = 1, y = 0$ mathongo mathongo mathongo mathongo										
$\frac{x+\frac{1}{8}}{y-0} = y - 0 + 0 = 0$										
$\frac{1}{1}$ m $3\sqrt{3}$ mgo $\frac{1}{1}$ 0 nathong $\frac{1}{2}$ math $\frac{1}$										
1 mathor o mathongo mathongo mathongo mathongo										
$\frac{1}{1} \text{mathon} \sqrt{2} \text{ /// or atho} \sqrt{2} \text{ /// mathon}$										
$3\sqrt{3}$ athor 0 o // 4 athongo /// mat										
///. mathongo ///. mathongo ///. mat										
$d = \sqrt{51}$ go /// mathongo /// mat										
mathongo /// mathongo /// mat										
$\frac{1}{d^2} = 51$ $\frac{1}{d^2} = 51$ mathongo /// mathongo /// mathongo										
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mathongo ///. mathongo ///. mathongo #MathBoleTohMathonGo

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo

$$\frac{1}{l_1}: \frac{x+2}{3} = \frac{y+1}{-2} = \frac{z+2}{0}$$
 mathongo /// mathongo /// mathongo /// mathongo

$$l_2: \frac{x-1}{m_1^2 + \log \alpha / 2} = \frac{z+5}{m_1^2 + \log \alpha / 2} = \frac{z+5}{m_1^$$

$$I_3'': \frac{x_{11}}{-3} = \frac{y_{11}}{2} = \frac{z_{11}}{4}$$
 mathongo /// mathongo /// mathongo /// mathongo

angle between $l_2 \& l_3$

$$\cos \theta = \frac{\left|1 \times (-3) + (-2)\left(\alpha/2\right) + 2 \times 4\right|}{\sqrt{1 + 4 + \frac{\alpha^2}{4}\sqrt{9 + 16 + 4}}}$$
 mathongo /// mathongo /// mathongo /// mathongo

$$\cos\theta = \frac{\left| -3 - \alpha + 8 \right|}{5 + \frac{\alpha^2}{4 \text{ mathongo}}}$$
 mathongo ///. mathongo

put
$$\alpha = 3$$
 mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

$$\theta = \cos^{-1}\left(\frac{4}{29}\right) \Rightarrow \theta = \sec^{-1}\left(\frac{29}{4}\right)$$
 mathongo /// mathongo /// mathongo

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo

$$(2x + 3y + z + 20) + \lambda(x - 3y + 5z - 8) = 0$$

$$(2+\lambda)x + (3-3\lambda)y + (1+5\lambda)z + 20-8\lambda = 0$$
 mathongo /// mathongo /// mathongo

Above plane is perpendicular to 2x + 3y + z + 20 = 0

So,
$$(2+\lambda).2+(3-3\lambda).3+(1+5\lambda).1=0 \Rightarrow \lambda=7$$
 mathongo /// mathongo /// mathongo

 \Rightarrow Equation of rotated plane : x - 2y + 4z - 4 = 0

Mirror image of
$$A\left(2,\frac{-1}{2},2\right)$$
 in rotated plane is longo ///. mathongo ///. mathongo

Equation of AB:
$$\frac{x-2}{1} = \frac{y+1/2}{-2} = \frac{z-2}{4} = k$$

Let coordinate of B be $(2+k, \frac{-1}{2}-2k, 2+4k)$

mathongo midpoint of AB is $\left(2+\frac{k}{2},\frac{-1}{2}-k,2+2k\right)$ which mathongo mathongo

will lie on the plane x - 2y + 4z - 4 = 0 /// mathongo /// mathongo /// mathongo /// mathongo

Hence
$$k = \frac{-2}{2}$$

Therefore B is
$$\left(\frac{4}{3}, \frac{5}{6}, \frac{-2}{3}\right) \equiv \left(\frac{8}{6}, \frac{5}{6}, \frac{-4}{6}\right)$$

So,
$$\frac{a}{8} = \frac{b}{5} = \frac{c}{4}$$
 mothon

$$(3x - y + 4z - 7) = 0$$

$$+ y - 3z + \lambda(3x - y + 4z - 1) = 0$$

Rotated by
$$\pi/2$$

$$(2 + 3 \lambda)x + (1 - \lambda)y + (-5 + 4\lambda)z - 7\lambda = 0$$

$$2x + y - 5z = 0$$
 mathong /// mathon

$$2(2+3\lambda) + (1-\lambda) - 5(-5+4\lambda) = 0$$

$$\Rightarrow$$
 4 + 6 λ + 1 - λ + 25 - 20 λ = 0 //. mathongo //. mathongo //. mathongo

$$30 = 15 \lambda$$

$$\lambda = 2$$

Required plane :- $8x - y + 3z - 14 = 0$ mathongo //////. mathongo ///////// mathongo

Required plane :-
$$8x - y + 3z - 14 = 0$$
 mathongo







#MathBoleTohMathonGo

Hence $k = \frac{-2}{3}$ /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

Therefore B is $\left(\frac{4}{3}, \frac{5}{6}, \frac{-2}{3}\right) \equiv \left(\frac{8}{6}, \frac{5}{6}, \frac{-4}{6}\right)$ mathongo /// mathongo /// mathongo

So, $\frac{a}{8} = \frac{b}{\sqrt{5}} = \frac{c}{\sqrt{14}}$ /// mathongo /// mathongo /// mathongo /// mathongo

mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

 $(2x + y - 5z) + \lambda(3x - y + 4z - 7) = 0$ mathongo /// mathongo /// mathongo

 $(2+3\lambda)x + (1-\lambda)y + (-5+4\lambda)z - 7\lambda = 0$ /// mathongo /// mathongo /// mathongo

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JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo

$$\vec{r} = (\alpha \hat{i} + \hat{j}) + \mu (2\hat{i} + 3\hat{k})$$
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$$^{\prime\prime\prime}$$
 $(1+\alpha)$ on 0 on 1 mathong of 1 mathon of 1 mathong of 1 mathong of 1 mathong of 1 matho

$$-3(2\pm 3(1-1)) = 0$$
thongo /// mathongo /// mathongo /// mathongo /// mathongo

$$2+3-3 \cdot = 0$$
 /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

$$\underset{\longrightarrow}{\underline{\cancel{44}}} \alpha = \frac{5}{3}$$
 mongo /// mathongo /// mathongo /// mathongo /// mathongo

Equation of plane:

$$9(x-1) + 2(y+1) + 6(z-1) = 0$$
 athongo /// mathongo /// mathongo

$$9x + 2y + 6z - 13 = 0$$

Mathongo Math

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Hints and Solutions MathonGo

$$3l^2 + m^2 + cl(l + m) = 0$$
/// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

$$3l^2 + m^2 + cl^2 + clm = 0$$
 ongo /// mathongo /// mathongo /// mathongo

$$(3+c)$$
 $l^2 + clm + m^2 = 0$ mathongo /// mathongo /// mathongo /// mathongo

$$(3+c)\left(\frac{l}{m}\right)^2 + c\left(\frac{l}{m}\right) + 1 = 0 \dots \dots (1)$$
 mathongo /// mathongo /// mathongo

$$\Rightarrow D = 0$$
// mathonac

$$(c-6)(c+2)=0$$
///. mathongo ///.

+vervalue of
$$c = 6$$
 mathongo ///. mathongo ///. mathongo ///. mathongo

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo mP(a,b,c)go ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo \rightarrow D.R 6, b - β , c - γ Miorgo ///. mathongo ///. mathongo ///. mathongo ///. mathongo thongo $/\!\!/$ mathongo $/\!\!/$ mathongo $/\!\!/$ mathongo $/\!\!/$ mathongo $/\!\!/$ mathongo $M = \left(\frac{\alpha + b}{2}, \frac{\beta + b}{2}, \frac{\gamma + c}{2}\right)$ athongo /// mathongo /// mathongo /// mathongo Since M lies on 3x + 4y + 12z + 19 = 0 mathongo /// mathongo /// mathongo /// mathongo $\Rightarrow 6a - 4b + 12c - 4\beta + 12\gamma + 20 = 0$ mathongo /// mathongo /// mathongo /// mathongo Since PP' is parallel to normal of the plane then nongo /// mathongo /// mathongo /// mathongo $\frac{6}{3} = \frac{b - \beta}{-4} = \frac{c - \gamma}{12}$ mathongo /// mathongo /// mathongo /// mathongo /// mathongo $\Rightarrow \beta = b + 8, \quad \gamma = c - 24$ mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo $a+b+c=5 \Rightarrow a+\beta-8+\gamma+24=5$ ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo Now putting these values in (1) we get // mathongo /// mathongo /// mathongo /// mathongo $6(-\beta-\gamma-11)-4(\beta-8)+12(\gamma+24)-4\beta+12\gamma+20=0$ $\Rightarrow 7\beta - 9\gamma = 170 - 33 = 137$ Q14 (A) ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo $P(4\lambda+2,2\lambda+1,3\lambda+1)$ athon 4, 2, 3% mathongo ///. mathongo ///. mathongo ///. mathongo % mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo //. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. m(1:2,4).go ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo $\frac{x+2}{4} = \frac{y-1}{2} = \frac{z+1}{3} = \lambda$ $(x, y, z) = (4\lambda - 2, 2\lambda + 1, 3\lambda - 1)$ /// mathongo /// mathongo /// mathongo mathongo /// mathongo // $\vec{b} = 4 \hat{i}_{1} + 2 \hat{j}_{2} + 3 \hat{k}$ mathongo ///. mathongo ///. mathongo ///. mathongo $\overrightarrow{AP} \cdot \overrightarrow{b} = 0$ $4(4\lambda - 3) + 2(2\lambda - 1) + 3(3\lambda - 5) = 0$ mathongo /// mathongo /// mathongo $29\lambda = 12 + 2 + 15 = 29$ $\lambda = 1$ P'=(2,3,2)ngo ///. mathongo ///. mathongo ///. mathongo ///. mathongo 3x + 4y + 12z + 23 = 0 $d' = \left| \frac{6+12+24+23}{\sqrt{9+16+144}} \right|$ mathongo /// mathongo /// mathongo /// mathongo $d' = \left| \frac{65}{12} \right| t = 5$ mathongo ///. mathongo ///. mathongo ///. mathongo Q15 (A) #MathBoleTohMathonGo

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Hints and Solutions MathonGo

$$\underline{x-3}$$
 $\underline{\underline{at}}\underline{y-2}$ $\underline{\underline{z-1}}$ $\underline{athongo}$ /// mathongo /// mathongo /// mathongo

$$\frac{x+3}{2}$$
 $\frac{z+5}{1}$ $\frac{z-5}{3}$ athongo /// mathongo /// mathongo /// mathongo

$$\boxed{n_2} = 2\hat{i}_1 + \hat{j}_2 - 3\hat{k}$$
 mathongo /// mathongo /// mathongo /// mathongo

$$\overrightarrow{BA} = 6\hat{i} - 4\hat{j} - 4\hat{k}$$

$$\overrightarrow{n_1} \times \overrightarrow{n_2} = \begin{bmatrix} \hat{i} & \hat{j} & \hat{k} \\ 2 & 3 & -1 \\ 2 & 1 & 3 \end{bmatrix} \text{ athongo } \text{ mathongo } \text{ ma$$

$$= 10 \hat{i}_{a} + 8 \hat{j}_{g} + 4 \hat{k}$$
 mathongo ///. mathongo ///. mathongo ///. mathongo

$$[\overrightarrow{BA} \ \overrightarrow{n_1} \ \overrightarrow{n_2}] = 60 + 32 + 16 = 108$$
 $|\overrightarrow{n_1} \times \overrightarrow{n_2}| = \sqrt{100 + 64 + 16} = \sqrt{180}$ mathongo /// mathongo /// mathongo ///

$$S.D = \frac{108}{\sqrt{180}} = \frac{108}{6\sqrt{5}} = \frac{18}{\sqrt{5}} = \frac{108}{\sqrt{5}} = \frac{108}{\sqrt{5}$$

$$\vec{n} = \frac{1}{100}$$
 mathongo /// mathongo /// mathongo /// mathongo /// mathongo

Three Dirach Solinal Geometry

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions

MathonGo

DR: of PT $\rightarrow \alpha - 1, \alpha + 2, \alpha - 3$

 $\alpha + 2, \alpha - 3$ mathongo ///. mathongo ///. mathongo ///. mathongo

DR: of OR \rightarrow 1,

 $\Rightarrow (\alpha - 1) \times 1 + (\alpha + 2) \times 1 + (\alpha - 3) \times 1 = 0$ mathongo /// mathongo /// mathongo

 3α \equiv 2thongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

 $\frac{1}{\alpha} = \frac{2}{3}$ thongo $\frac{1}{2}$ mathongo $\frac{1}{2}$ mathongo $\frac{1}{2}$ mathongo $\frac{1}{2}$ mathongo $\frac{1}{2}$ mathongo

 $\begin{array}{c} \text{mathongo} \\ \text{PT}^2 = \frac{1}{9} + \frac{64}{9} + \frac{49}{9} \\ \text{mathongo} \end{array} \begin{array}{c} \text{math$

 $PT^{2} = \frac{114}{\text{mat9ongo}}$ mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

 $p_T = \frac{\sqrt{114}}{3}$ | mathongo | mathongo

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math 2×19 // 11 thongo // mathongo // mathongo // mathongo // mathongo

 $\frac{27}{\text{mathongo}} \frac{27}{\text{mathongo}} \frac{27}{\text{mat$

/// mathongo /// $=\frac{4}{27}\sqrt{38}$ /// mathongo /// mathongo /// mathongo /// mathongo

 $\frac{\text{mathongo}}{\text{Area}} = \frac{\text{mathongo}}{2} \times \sqrt{18} \sqrt{18} \times \frac{\text{mathongo}}{27} \sqrt{38}$ mathongo /// mathongo /// mathongo /// mathongo $\begin{array}{c} 2 \\ \text{mathongo} \\ = \frac{18}{2} \times \frac{4}{27} \sqrt{38} = \frac{36}{27} \sqrt{38} \\ \text{mathongo} \\ \text{mathongo}$

Q17 (A)athongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

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JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo Equation of plane passing through the intersection hongo /// mathongo /// mathongo /// mathongo of planes 5x + 8y + 13z - 29 = 0 and 8x - 7y + z -/// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo $5x+8y+3z-29+\lambda(8x-7y+z-20)=0$ rand hongo /// mothongo /// mothongo /// mothongo if it is passing through (2,1,3) then $\lambda = \frac{7}{2}$ mathongo /// mathongo /// mathongo P₁: Equation of plane through intersection of longo /// mathongo /// mathongo /// mathongo 5x + 8y + 13z - 29 = 0 and 8x - 7y + z - 20 = 0mathongo ///. mathongo ///. mathongo ///. mathongo and the point (2, 1, 3) is /// mathongo // mathongo /// mathongo /// mathongo /// mathongo /// mathongo // mat Similarly P₂ : Equation of plane / through hongo /// mathongo /// mathongo /// mathongo intersection of /// mathongo // mathongo /// mathongo /// mathongo // mathongo // mathongo // mathongo // mathongo // mathon and the point (0,1,2) is mathongo /// mathongo /// mathongo /// mathongo /// mathongo \Rightarrow x + y + 2z = 5 Angle between planes = $\theta = \cos^{-1} \left(\frac{3}{\sqrt{6}\sqrt{6}} \right) = \frac{\pi}{3}$ mathongo /// mathongo /// mathongo /// mathongo /// mathongo Mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo #MathBoleTohMathonGo

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo										
Equation of plane passing through line of										
intersection of planes $P_1: \vec{r}((\hat{i}+3\hat{j}-\hat{k})=6$ and mathongo mathongo mathongo										
$P_2: \vec{r} \cdot (-6\hat{i} + 5\hat{j} - \hat{k}) = 7$ is /// mathongo /// mathongo /// mathongo										
$\left(\overline{r}\cdot\left(\hat{i}+3\hat{j}-\hat{k}\right)-6\right)+\lambda\left(\overline{r}\cdot\left(-6\hat{i}+5\hat{j}-\hat{k}\right)-7\right)=0$										
and it passes through point $\left(2,3,\frac{1}{2}\right)$ mathongo										
$\Rightarrow \left(2+9-\frac{1}{2}-6\right)+\lambda\left(-12+15-\frac{1}{2}-7\right)=0$										
⇒ λn=1thongo ///. mathongo ///. mathongo										
Equation of plane is $\overline{r} \cdot \left(-5\hat{i} + 8\hat{j} - 2\hat{k}\right) = 13$ mathongo										
$ \vec{a} ^2 = 25 + 64 + 4 = 93$; d = 13 /// mathongo /// mathongo Value of $\frac{ 13\vec{a} ^2}{1^2} = 93$										
Value of $\frac{1}{12} = 93$ /// mathdongo /// mathongo										
Q19 (D)athongo ///. mathongo ///. mathongo										
/// mathongo /// mathongo #MathBoleTe	mathongo ohMathonGo									

JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo

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$$\hat{i}$$
 \hat{j} \hat{k} \hat{k} mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

$$18x - y + 7z = d$$

∴ Eq
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 of plane mathongo m

$$-18x + y_1 - 7z = 2$$
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JEE Main 2022 (June) Chapter-wise Qs Bank

Hints and Solutions MathonGo P(1,2,3) and P(1, $R(\alpha,\beta,\gamma)$ mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo $\frac{M}{mathdago} L: \frac{x-6}{3} = \frac{y-1}{3} = \frac{z-2}{3}$ mathongo ///. mathongo ///. mathongo ///. mathongo Q(x, y, z) ngo /// mathongo /// mathongo /// mathongo /// mathongo ... $M = (3\lambda + 6, 2\lambda + 1, 3\lambda + 2)$ /// mathongo // mathongo /// mathongo // mathongo // mathongo // mathongo // mathongo // mathongo / Let M be the mid-point of PQ Now, $\overrightarrow{PM} = (3\lambda + 5)\hat{i} + (2\lambda - 1)\hat{j} + (3\lambda - 1)\hat{k}$ mathongo /// mathongo /// mathongo $:: \overrightarrow{PM} \perp (3\hat{i} + 2\hat{j} + 3\hat{k})_{mathongo}$ mathongo ///. mathongo ///. mathongo $\therefore 3(3\lambda+5)+2(2\lambda-1)+3(3\lambda-1)=0$ /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo ongo /// mathongo /// mathongo /// mathongo /// mathongo Since R is mid-point of PM $22(\alpha+\beta+\gamma)=125$ mathongo /// mathongo /// mathongo /// mathongo Q21 (C) $\frac{a-2}{3} = \frac{b-4}{-1} = \frac{c-7}{4} = \frac{c-2(6-4+28-2)}{3^2+1^2+4^2}$ mathongo /// mathongo /// mathongo mathongo /// mathongo /// mathongo /// mathongo \Rightarrow 2a + b + 2c = -6 // mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

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Hints and Solutions MathonGo

Points P(1, 2, -1) and Q (2, -1, 3) lie on same side hongo /// mathongo /// mathongo /// of the plane.

Perpendicular distance of point P from plane is nothongo /// mathongo /// mathongo /// mathongo

$$\left| \frac{-1+2-1-1}{\sqrt{1^2+1^2+1^2}} \right| = \frac{1}{\sqrt{3}}$$
 mathongo /// mathongo // ma

between P and Q = distance between their foot of _____ mathongo ____ mathongo ____ mathongo perpendiculars.

$$\Rightarrow |\overrightarrow{PQ}| = \sqrt{(1-2)^2 + (2+1)^2 + (-1-3)^2}$$
 /// mathongo /// mathongo /// mathongo

$$= \sqrt{26}$$
 mathongo /// mathongo // mathongo /// mathongo /// mathongo /// mathongo /// mathongo // mathongo //

Alternatéhongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

$$-x+y+z-1=0$$
 // $P(1,2,1-1)$ $P(2,-1,3)$ mathongo /// mathongo /// mathongo /// mathongo

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 $M(x_1,y_1,z_1)$ mathongo /// mathongo /// mathongo /// mathongo /// mathongo

$$\frac{x_1 - 1}{\sqrt{2}} = \frac{y_1 - 2}{1} = \frac{z_1 + 1}{1} = \frac{1}{3}$$

$$x_1 = \frac{2}{3}, y_1 = \frac{7}{3}, z_2 = \frac{-2}{3}$$
mathongo ///. mathongo ///. mathongo ///. mathongo

$$x_1 = \frac{2}{3}, y_1 = \frac{7}{3}, z_1 = \frac{-2}{3}$$
/// mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

$$M\left(\frac{2}{3},\frac{7}{3},\frac{-2}{3}\right)$$
 mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

 $\frac{x_2' - 12}{1} = \frac{y_2 + 1}{1} = \frac{z_2 / 3}{1} = \frac{y_1 + 1}{2} = \frac{y_2 + 1}$

$$\frac{1}{x_2} = \frac{5}{3}, y_2 = \frac{2}{3}, z_2 = \frac{10}{3}$$
 mathongo ///. mathongo ///. mathongo ///. mathongo

$$x_2 = \frac{3}{3}, y_2 = \frac{2}{3}, z_2 = \frac{13}{3}$$

$$N = \left(\frac{5}{3}, \frac{+2}{3}, \frac{10}{3}\right)$$
 /// mathongo /// mathongo /// mathongo /// mathongo

 $d^2 = 1^2 + 3^2 + 4^2 = 26$ /// mathongo /// mathongo /// mathongo /// mathongo

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Hints and Solutions MathonGo

$$P_1:\vec{r}.(2\hat{i}+\hat{j}-3\hat{k})=4$$
 mathongo /// mathongo /// mathongo /// mathongo

$$P_1$$
: $2x + y - 3z = 4$ mathongo /// mathongo /// mathongo /// mathongo /// mathongo /// mathongo

$$P_2$$
 $x-2$ $y+3$ $z-2$ $y-3$ $z-2$ $y-3$ $z-2$ $y-3$ $y-4$ $y-4$

$$\Rightarrow -5x + 5y + z + 23 = 0$$

Let a, b, c be the d'rs of line of intersection

$$\frac{\text{///} \text{ math}_{16\lambda^{\circ}}}{\text{Then a}} = \frac{13\lambda}{15}; \ c = \frac{15\lambda^{//}}{15} \quad \text{mathongo} \quad \text{///} \text{ mathongo} \quad \text{//} \text{ mathongo} \quad \text{//} \text{ mathongo} \quad \text{//} \text{ mathongo} \quad \text{//} \text{ mathongo}$$

Q24 (B)

So
$$2p + q = 8$$
 (i)

mathematical math

So
$$2p + q = 8$$
 (i)
Also given line is perpendicular to normal plane so $\frac{1}{2}$ mathongo $\frac{1}{2}$ mathongo

Eq. of plane
$$15x - 22y + z - 5 = 0$$
 mathongo ///. mathongo ///. mathongo ///. mathongo ///. mathongo

its distance from origin =
$$\frac{6}{\sqrt{710}} = \sqrt{\frac{5}{142}}$$
 mathongo /// mathongo /// mathongo /// mathongo

Image of
$$P(1, 2, 1)$$
 in $x + 2y + 2z - 16 = 0$ mathongo /// mathongo /// mathongo /// mathongo

is given by Q(4, 8, 7)

Eq. of plane
$$T = \begin{bmatrix} 4 & 8 & 1 & 1 \\ 1 & 1 & 2 \end{bmatrix} = 0$$
 ///. mathongo ///. mathongo ///. mathongo

$$\Rightarrow$$
 2x - z = 1 so B(1, 2, 1) lies on it.

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Hint	Hints and Solutions MathonGo										
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