MATHS

BOOKS - JEE MAINS PREVIOUS YEAR ENGLISH

THREE DIMENSIONAL GEOMETRY

Others

1. Let L be the line of intersection of the planes $2x + 3y + z = 1$ and $x + 3y + 2z = 2$. If L makes an angles α with the positive x-axis, then cosα equals

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2. If (2, 3, 5) is one end of a diameter of the sphere $x^2 + y^2 + z^2 - 6x - 12y - 2z + 20 = 0$, then the coordinates of the other end are

A. $(4, 9, -3)$

B. $(4, 3, 5)$

C. $(4, 3, -3)$

D. $(4, -3, 9)$

Answer: null

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3. If a line makes an angle of $\frac{\pi}{4}$ with the positive directions of each of x-axis and y-axis, then the angle that the line makes with the positive direction of the z-axis is

(1) $\frac{\pi}{6}$ (2) $\frac{\pi}{3}$ (3) $\frac{\pi}{4}$ (4) $\frac{\pi}{2}$

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4. The line passing through the points (5, 1, a) and (3, b, 1) crosses the yzplane at the point $\left(0, \frac{17}{2}, \frac{-13}{2}\right)$ .Then (1) $a = 2, b = 8$ (2) $a = 4, b = 6$ (3) $a = 6, b = 4$ (4) $a = 8, b = 2$

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5. If the straight lines $\frac{x-1}{k}=\frac{y-2}{2}=\frac{z-3}{3}$ and $\frac{x-2}{3}=\frac{y-3}{k}=\frac{z-1}{2}$ intersect at a point, then the integer k is equal to (1) -5 (2) 5 (3) 2 (4) -2

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6. Let the line $\frac{x-2}{3}=\frac{y-1}{-5}=\frac{z+2}{2}$ lie in the plane $x+3y-\alpha z+\beta=0$. Then (α, β) equals (1) $(6, -17)$ (2) $(-6, 7)$ (3) $(5, -15)$ (4) $(-5, 5)$

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7. Statement-1: The point A(3, 1, 6) is the mirror image of the point B(1, 3, 4) in the plane $xy+z=5$. Statement-2:

The plane x $xy + z = 5$ bisects the line segment joining A(3, 1, 6) and B(1, 3, 4). (1) Statement-1 is true, Statement-2 is true; Statement-2 is not the correct explanation for Statement-1 (2) Statement-1 is true, Statement-2 is false (3) Statement-1 is false, Statement-2 is true (4) Statement-1 is true, Statement-2 is true; Statement-2 is the correct explanation for Statement-1

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8. A line AB in three-dimensional space makes angles 45^o and 120^o with the positive x-axis and the positive y-axis respectively. If AB makes an acute angle q with the positive z-axis, then q equals

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9. If the angle between the line $x = \frac{y-1}{2} = \frac{z-3}{\lambda}$ and the plane $x + 2y + 3z = 4$ .is $\cos^{-1}\left(\sqrt{\frac{5}{14}}\right)$, then λ equals: (1) $\frac{2}{3}$ (2) $\frac{3}{2}$ (3) $\frac{2}{5}$ (3) $\frac{5}{3}$

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10. If the lines $\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-1}{4}$ and $\frac{x-3}{1} = \frac{y-k}{2} = \frac{z}{1}$ intersect, then k is equal to (1) -1 (2) $\frac{2}{9}$ (3) $\frac{9}{2}$ (4) 0

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11. Distance between two parallel planes $2x + y + 2z = 8$ and $4x + 2y + 4z + 5 = 0$ is (1) $\frac{5}{2}$ (2) $\frac{7}{2}$ (3) $\frac{9}{2}$ (4) $\frac{3}{2}$

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12. The equation of the plane containing the line $2x - 5y + z = 3; x + y + 4z = 5$, and parallel to the plane, $x + 3y + 6z = 1$, is : (1) $2x + 6y + 12z = 13$ (2) $x + 3y + 6z = -7$ (3) $x + 3y + 6z = 7$ (4) $2x + 6y + 12z = -13$

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13. The distance of the point (1, 0, 2) from the point of intersection of the line $\frac{x-2}{3}=\frac{y+1}{4}=\frac{z-2}{12}$ and the plane x y + z = 16, is : (1) $2\sqrt{14}$ (2) 8 (3) $3\sqrt{21}$ (4) 27

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14. If the line, $\frac{x-3}{2}=\frac{y+2}{-1}=\frac{z+4}{3}$ lies in the place, $lx+my-z=9$, then l^2+m^2 is equal to: (1) 26 (2) 18 (3) 5 (4) 2

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15. If the image of the point $P(1,\ -2, 3)$ in the plane, $2x+3y-4z+22=0$ measured parallel to the line,

$\frac{x}{1} - \frac{y}{4} - \frac{z}{5}$ is Q , then PQ is equal to : $\sqrt{42}$ (2) $6\sqrt{5}$ (3) $3\sqrt{5}$ (4) $3\sqrt{42}$

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16. The distance of the point $(1, 3, -7)$ from the plane passing through the point $(1, -1, -1)$, having normal perpendicular to both the lines $\frac{x-1}{1} = \frac{y+2}{-2} = \frac{z-4}{3} and \frac{x-2}{2} = \frac{y+1}{-1} = \frac{z+7}{-1} is:$ $\frac{5}{\sqrt{83}}$ (2) $\frac{10}{\sqrt{74}}$ (3) $\frac{20}{\sqrt{74}}$ (4) $\frac{10}{\sqrt{83}}$

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