MATHS

BOOKS - CENGAGE MATHS (HINGLISH)

EQAUTION OF STRAIGHT LINE AND ITS APPLICATION

Dpp 3 2

1. The ratio in which the plane $2x - 1 = 0$ divides the line joining $(-2, 4, 7)$ and

$(3, -5, 8)$ is

A. $2:3$

B. $4:5$

C. $7:8$

D. $1:1$

Answer: D

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2. If the lines

$$\hat{i} - \left(\hat{i} + \hat{j} + \hat{k}\right) \times (1-p)\hat{i} + 3\hat{j} - 2\hat{k} = 0$$

and

$$\left(\overrightarrow{c} - \left(3\hat{i} + \hat{j} - 5\hat{k}\right)\right) \times (1-p)\hat{i} + 3\hat{j} - 2\hat{k} = 0$$

are coplanar then the value of p is

A. $\frac{4}{3}$

B. 1

C. $\frac{2}{3}$

D. $\frac{1}{3}$

Answer: D

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3. A ray of light is sent through the point P(1,2,3) and is reflected on the XY plane. If the reflected ray passes through the point Q(3,2,5) then the equation of the reflected ray is

A. $\frac{x-3}{1}=\frac{y-2}{0}=\frac{z-5}{1}$

B. $\frac{x-3}{1}=\frac{y-2}{0}=\frac{z-5}{-4}$

C. $\frac{x-3}{1}=\frac{y-2}{0}=\frac{z-5}{4}$

D. $\frac{x-1}{1}=\frac{y-2}{0}=\frac{z-3}{4}$

Answer: C

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4. If lines $x = y = zandx = \frac{y}{2} = \frac{z}{3}$ and third line passing through $(1, 1, 1)$ form a triangle of area $\sqrt{6}$ units, then the point of intersection of third line with the second line will be a. $(1, 2, 3)$ b. $2, 4, 6$ c. $\frac{4}{3}, \frac{6}{3}, \frac{12}{3}$ d. none of these

A. $\left(\frac{4}{3}, \frac{8}{3}, \frac{12}{3}\right)$

B. (1,2,3)

C. (2,4,6)

D. (3,6,9)

Answer: C

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5. A line with direction ratio $(2, 1, 2)$ intersects the lines $\vec{r} = -\hat{j} + \lambda\left(\hat{i} + \hat{j} + \hat{k}\right)$ and $\vec{r} = -\hat{i} + \mu\left(2\hat{i} + \hat{j} + \hat{k}\right)$ at A and B, respectively then length of AB is equal to

A. 1

B. 2

C. 3

D. 4

Answer: C

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6. The centroid of the triangle formed by (0, 0, 0) and the point of intersection of $\frac{x-1}{x} = \frac{y-1}{2} = \frac{z-1}{1}$ with $x = 0$ and $y = 0$ is

A. (1,1,1)

B. $(1/6, -1/3, 1/6)$

C. $(-1/6, 1/3, -1/6)$

D. $(1/3, 1/3, 1/3)$

Answer: B

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7. The distance from the point $-\hat{i} + 2\hat{j} + 6\hat{k}$ to the straight line through the point (2,3,-4) and parallel to the vector $6\hat{i} + 3\hat{j} - 4\hat{k}$, is

A. 6

B. 7

C. 8

D. 9

Answer: B

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8. If the line $\frac{x-2}{-1} = \frac{y+2}{1} = \frac{z+k}{4}$ is one of the angle bisector of the lines

$\frac{x}{1} = \frac{y}{-2} = \frac{z}{3}$ and $\frac{x}{-2} = \frac{y}{3} = \frac{z}{1}$ then the value of k is

A. 1

B. 2

C. 4

D. 8

Answer: D

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9. A variable point P is on the circle $x^2 + y^2 = 1$ on xy plane. From point P, perpendicular PN is drawn to the line $x = y = z$ then the minimum length of PN is:-

A. $\sqrt{2}$

B. $\frac{1}{\sqrt{2}}$

C. $\sqrt{3}$

D. $\frac{1}{\sqrt{3}}$

Answer: D

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10. Which of the following is/are the points that is/are at a distance of 12 units from the point whose position vector is $\left(8\hat{k}+10\hat{j}-8\hat{k}\right)$ on the line which is parallel to $\left(2\hat{i}+\hat{j}+2\hat{k}\right)$?

A. $16\hat{i}+14\hat{j}$

B. $6\hat{j}-16\hat{k}$

C. $\left(16\hat{i}+18\hat{j}-4\hat{k}\right)$

D. none of these

Answer: A::B

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11. Three mutually perpendicular lines are drawn from the point $(1, 2, -1)$. If one of the lines is perpendicular to the x-axis and the direction ratios of the second line are (1,2,-1) then which are the possible equation(s) of the third line

A. $\vec{r} = 6\hat{i} + \lambda\left(5\hat{i} - 2\hat{j} + \hat{k}\right)$

B. $\frac{x-1}{5} = \frac{y-3}{-2} = \frac{z+1}{1}$

C. $\frac{x+4}{5} = \frac{y-4}{-2} = \frac{z+2}{1}$

D. none of these

Answer: A::C

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12. The lines $\frac{x-1}{1}=\frac{y+1}{-1}=\frac{z}{2}$ and $\frac{x}{2}=\frac{y-1}{-2}=\frac{z-1}{\lambda}$ are

A. parallel if $\lambda=4$

B. perpendicular if $\lambda=-1$

C. coplanar if $\lambda=4$

D. skew lines $\lambda = 5$

Answer: A::B::C::D

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13. Match the following lists:

A. 3,1,2,4

B. 2,3,4,1

C. 4,1,2,3

D. 2,4,3,1

Answer: C

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