NDA 2 2024

LIVE

MATHS REVISION

CLASS 5

NAVJYOTI SIR

SSBCrack EXAMS

09 August 2024 Live Classes Schedule

8:00AM	09 AUGUST 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	09 AUGUST 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

9:00AM	INTRODUCTION OF SRT & SDT	ANURADHA MA'AM

AFCAT 2 2024 ANSWERKEY SESSIONS

12:00PM	AFCAT 2 2024 ANSWER KEYS - SHIFT 1	
5:00PM	AFCAT 2 2024 ANSWER KEYS - SHIFT 2	

NDA 2 2024 LIVE CLASSES

11:00AM	GK - POLITY REVISION - CLASS 2	RUBY MA'AM
12:00PM	PHYSICS REVISION - CLASS 5	NAVJYOTI SIR
1:00PM	MATHS REVISION - CLASS 5	NAVJYOTI SIR
2:00PM	BIOLOGY REVISION - CLASS 5	SHIVANGI MA'AM
5:30PM	ENGLISH - MATCHING LIST - CLASS 2	ANURADHA MA'AM

CDS 2 2024 LIVE CLASSES

11:00AM	GK - POLITY REVISION - CLASS 2	RUBY MA'AM
12:00PM	PHYSICS REVISION - CLASS 5	NAVJYOTI SIR
2:00PM	BIOLOGY REVISION - CLASS 5	SHIVANGI MA'AM
3:00PM	MATHS REVISION - CLASS 5	NAVJYOTI SIR
5:30PM	ENGLISH - MATCHING LIST - CLASS 2	ANURADHA MA'AM

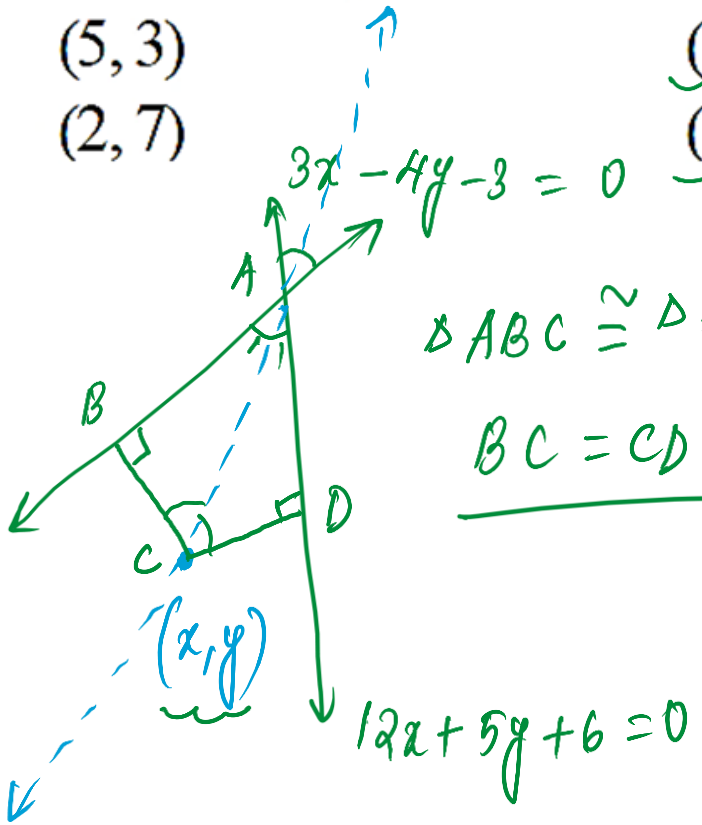
REVISION TOPICS :

- 2D Geometry
- Vector Algebra

Q) The bisector of the acute angle between the straight lines $3x - 4y - 3 = 0$ and $12x + 5y + 6 = 0$ passes through which one of the following points ?

(a) $(5, 3)$ (b) $(-3, 6)$

(c) $(2, 7)$ (d) $(-1, 4)$



$\triangle ABC \cong \triangle ACD$

$BC = CD$

$BC = CD$

$$\frac{|3x - 4y - 3|}{\sqrt{3^2 + 4^2}} = \frac{|12x + 5y + 6|}{\sqrt{12^2 + 5^2}}$$

$$\frac{1}{5}(3x - 4y - 3) = \frac{12x + 5y + 6}{13}$$

Substitute (a), (b), (c) and (d) points and check.

Q) The bisector of the acute angle between the straight lines $3x - 4y - 3 = 0$ and $12x + 5y + 6 = 0$ passes through which one of the following points ?

(a) $(5, 3)$ (b) $(-3, 6)$

(c) $(2, 7)$ (d) $(-1, 4)$

Ans: (c)

Q) If $(-5, 4)$ divides the line segment between the coordinate axes in the ratio $1:2$, then what is its equation?

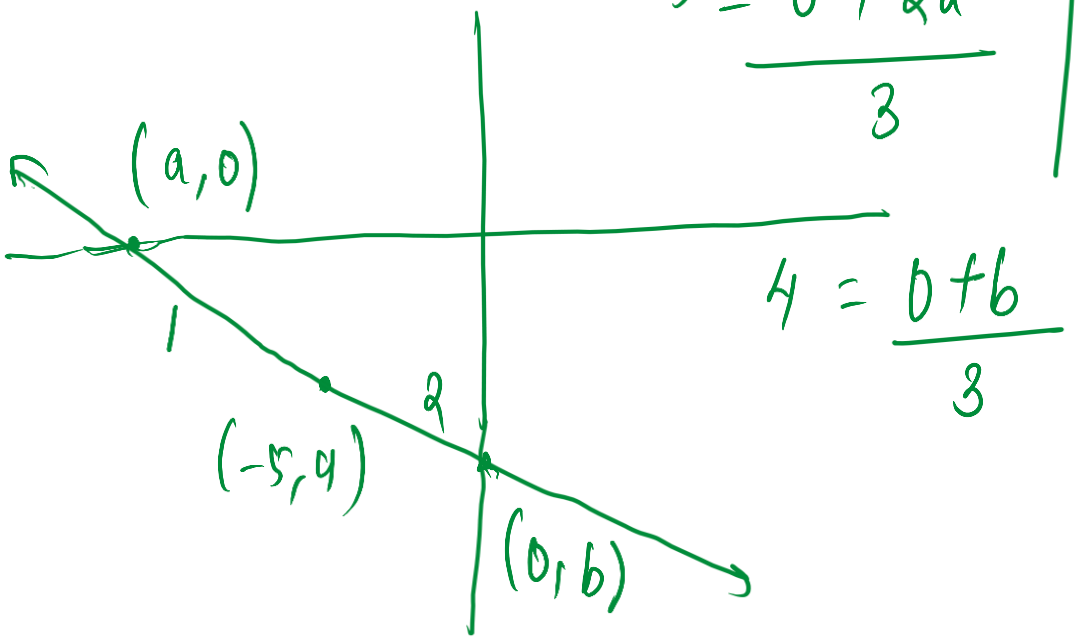
(a) $8x+5y+20=0$ (b) $5x+8y-7=0$

(c) $8x-5y+60=0$ (d) $5x-8y+57=0$

$\frac{x}{a}+\frac{y}{b}=1$

$-5=\frac{0+2a}{3}$

$4=\frac{0+b}{3}$



Q) If $(-5, 4)$ divides the line segment between the coordinate axes in the ratio $1:2$, then what is its equation?

(a) $8x + 5y + 20 = 0$

(b) $5x + 8y - 7 = 0$

(c) $8x - 5y + 60 = 0$

(d) $5x - 8y + 57 = 0$

Ans: (c)

SSBCrack EXAMS

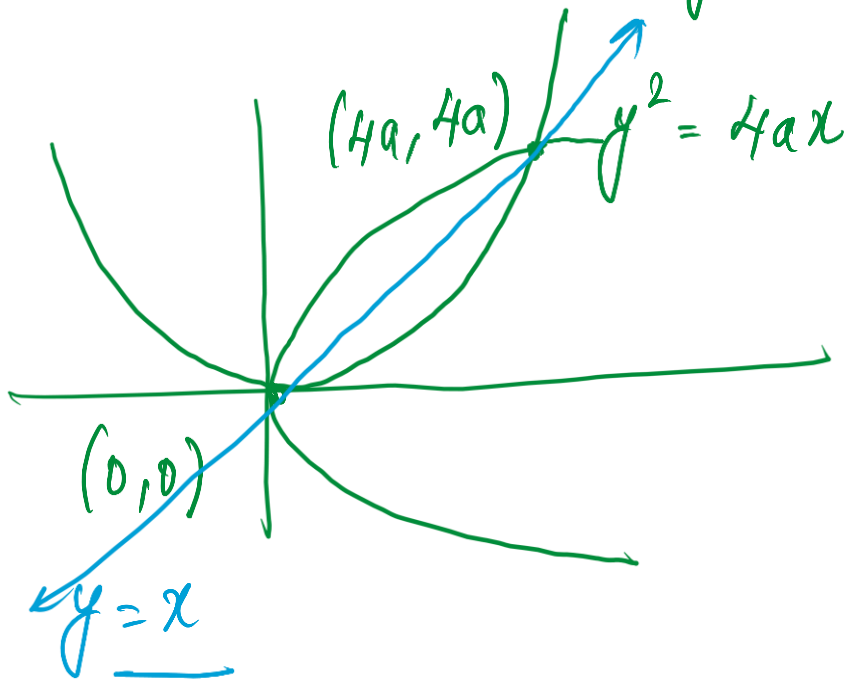
Q) The two parabolas $y^2 = 4ax$ and $x^2 = 4ay$ intersect

(a) at two points on the line $y = x$

(b) only at the origin

(c) at three points one of which lies on $y + x = 0$

(d) only at (4a, 4a)



$$\left(\frac{y^2}{4a}\right)^2 = 4ay$$

$$64a^3 = y^3$$

$$y = 4a$$

Q) The two parabolas $y^2 = 4ax$ and $x^2 = 4ay$ intersect

(a) at two points on the line $y = x$
(b) only at the origin
(c) at three points one of which lies on $y + x = 0$
(d) only at $(4a, 4a)$

Ans: (a)

Q) If A, B and C are in AP, then the straight line $Ax + 2By + C = 0$ will always pass through a fixed point. The fixed point is

(a) (0, 0) (b) (– 1, 1)

(c) (1, – 2) (d) (1, – 1)

$2B = A + C$

$A - 2B + C = 0$

$Ax + 2By + C = 0$

comparing

$x = 1, y = -1$

Q) If A, B and C are in AP, then the straight line $Ax + 2By + C = 0$ will always pass through a fixed point. The fixed point is

(a) (0, 0) (b) (– 1, 1)

(c) (1, – 2) (d) (1, – 1)

Ans: (d)

Q) What is the locus of the point of intersection of the straight line $x\cos\theta + y\sin\theta = a$ and the straight line $x\sin\theta - y\cos\theta = b$?

(a) A circle
(b) An ellipse
(c) A hyperbola
(d) A parabola

Let point of intersection be (h,k).

$h\cos\theta + k\sin\theta = a$ — (1)

$h\sin\theta - k\cos\theta = b$ — (2)

squaring and adding (1) & (2),

$h^2 + k^2 = a^2 + b^2$

$(h-0)^2 + (k-0)^2 = a^2 + b^2$

$(x-0)^2 + (y-0)^2 = r^2$

Q) What is the locus of the point of intersection of the straight line $x\ \cos\theta + y\ \sin\theta = a$ and the straight line $x\ \sin\theta - y\ \cos\theta = b$?

(a) A circle
(b) An ellipse
(c) A hyperbola
(d) A parabola

Ans: (a)

Q) What is the acute angle between the lines $Ax+By=A+B$ and $A(x-y)+B(x+y)=2B$?

(a) 45°

(b) $\tan^{-1}\left(\frac{A}{\sqrt{A^2+B^2}}\right)$

(c) $\tan^{-1}\left(\frac{B}{\sqrt{A^2+B^2}}\right)$

(d) 60°

$m_1 = -\frac{A}{B}$

$(A+B)x + y(B-A) - 2B = 0$

$m_2 = -\frac{(A+B)}{(B-A)}$

$\tan\theta = \left|\frac{m_1 - m_2}{1+m_1 m_2}\right| = \left|\frac{-\frac{A}{B} + \frac{A+B}{B-A}}{1+\left(\frac{A}{B}\right)\left(\frac{A+B}{B-A}\right)}\right| = \left|\frac{-AB+A^2+BA+B^2}{B^2-AB+A^2+AB}\right|$

$= \left|\frac{A^2+B^2}{A^2+B^2}\right| = |1| = 1$

$\theta = 45^\circ$ ✓

Q) What is the acute angle between the lines $Ax + By = A + B$ and $A(x - y) + B(x + y) = 2B$?

(a) $45°$

(b) $\tan^{-1}\left(\frac{A}{\sqrt{A^2 + B^2}}\right)$

(c) $\tan^{-1}\left(\frac{B}{\sqrt{A^2 + B^2}}\right)$

(d) $60°$

Ans: (a)

Q) If $\vec{r}_1 = \lambda\hat{i} + 2\hat{j} + \hat{k}$, $\vec{r}_2 = \hat{i} + (2-\lambda)\hat{j} + 2\hat{k}$ are such that $|\vec{r}_1| > |\vec{r}_2|$, then λ satisfies which one of the following?

(a) $\lambda = 0$ only (b) $\lambda = 1$

(c) $\lambda < 1$ (d) $\lambda > 1$

$\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$

$|\vec{r}| = \sqrt{x^2 + y^2 + z^2}$

$\sqrt{\lambda^2 + 4 + 1^2} > \sqrt{1^2 + (2-\lambda)^2 + 2^2}$

$\lambda^2 + 5 > \lambda^2 - 4\lambda + 9$

$4\lambda > 4$

$\lambda > 1$

Q) If $\vec{r}_1 = \lambda\hat{i} + 2\hat{j} + \hat{k}$, $\vec{r}_2 = \hat{i} + (2-\lambda)\hat{j} + 2\hat{k}$ are such that $|\vec{r}_1| > |\vec{r}_2|$, then λ satisfies which one of the following?

(a) $\lambda = 0$ only
(b) $\lambda = 1$
(c) $\lambda < 1$
(d) $\lambda > 1$

Ans: (D)

Q) If $|\vec{a}| = 2, |\vec{b}| = 5$ and $|\vec{a} \times \vec{b}| = 8$, then what is the value of $\vec{a} \cdot \vec{b}$?

(a) 4 (b) 6

(c) 8 (d) 10

$|\vec{a} \times \vec{b}| = ab\sin\theta$

$\vec{a} \cdot \vec{b} = ab\cos\theta$

$|\vec{a} \times \vec{b}| = ab\sin\theta = 8$

$2 \times 5 \times \sin\theta = 8$

$\sin\theta = \frac{4}{5}$ | $\cos\theta = \frac{3}{5}$

$\vec{a} \cdot \vec{b} = ab\cos\theta = 2 \times 5 \times \frac{3}{5} = 6$

(OR)

$(ab)^2 = (ab\sin\theta)^2 + (ab\cos\theta)^2$

$(2 \times 5)^2 = 8^2 + (\vec{a} \cdot \vec{b})^2$

$10^2 - 8^2 = (\vec{a} \cdot \vec{b})^2$

$(\vec{a} \cdot \vec{b})^2 = 36$

$\vec{a} \cdot \vec{b} = 6$

Q) If $|\vec{a}| = 2, |\vec{b}| = 5$ and $|\vec{a} \times \vec{b}| = 8$, then what is the value of $\vec{a} \cdot \vec{b}$?

(a) 4 (b) 6

(c) 8 (d) 10

Ans: (B)

Q) Let $\vec{a}$ and $\vec{b}$ be two unit vectors and α be the angle between them. If $(\vec{a}+\vec{b})$ is also the unit vectors, then what is the value of α?

(a) $\frac{\pi}{4}$ ✓

(b) $\frac{\pi}{3}$ ✓

(c) $\frac{2\pi}{3}$ ✓✓

(d) $\frac{\pi}{2}$ ✓

$\cos\alpha = -\frac{1}{2}$

$|\vec{a}+\vec{b}|^2 = |\vec{a}|^2 + |\vec{b}|^2 + 2|\vec{a}||\vec{b}|\cos\alpha$

$1^2 = 1^2 + 1^2 + 2(1)(1)\cos\alpha$

Q) Let $\vec{a}$ and $\vec{b}$ be two unit vectors and α be the angle between them. If $(\vec{a}+\vec{b})$ is also the unit vectors, then what is the value of α?

(a) $\frac{\pi}{4}$ (b) $\frac{\pi}{3}$

(c) $\frac{2\pi}{3}$ (d) $\frac{\pi}{2}$

Ans: (C)

Q) If $x\hat{i}+y\hat{j}+z\hat{k}$ is a unit vector and $x:y:z=\sqrt{3}:2:3$, then what is the value of z?

(a) $\frac{3}{16}$ (b) 3

(c) $\frac{3}{4}$ (d) 2

$x=\sqrt{3}k$

$y=2k$

$z=3k$

Let $\vec{a}=x\hat{i}+y\hat{j}+zk$

$|\vec{a}|=\sqrt{x^2+y^2+z^2}=1$

$x^2+y^2+z^2=1$

$3k^2+4k^2+9k^2=1$

$k^2=\frac{1}{16}$ $\quad k=\frac{1}{4}, -\frac{1}{4}$

$z=3k$

$=\left(\frac{3}{4}\right)$

checking options, all are positive

Q) If $x\hat{i}+y\hat{j}+z\hat{k}$ is a unit vector and $x:y:z=\sqrt{3}:2:3$, then what is the value of z?

(a) $\frac{3}{16}$

(b) 3

(c) $\frac{3}{4}$

(d) 2

Ans: (C)

Q) Which one of the following is the unit vector perpendicular to the vectors $4\hat{i}+2\hat{j}$ and $-3\hat{i}+2\hat{j}$?

(a) $\frac{\hat{i}+\hat{j}}{\sqrt{2}}$ (b) $\frac{\hat{i}-\hat{j}}{\sqrt{2}}$

(c) $\hat{k}$ (d) $\frac{\hat{i}+\hat{j}+\hat{k}}{\sqrt{3}}$

$\vec{A}$ $\vec{B}$

$\vec{a} = x\hat{i}+y\hat{j}+z\hat{k}$

$x^2+y^2+z^2=1$ (as $\vec{a}$ is a unit vector)

$\vec{a} = \hat{k}$ $\quad -\hat{k}$

$z^2=1 \Rightarrow z=1,-1$

$\vec{a}\cdot\vec{A}=0$ | $\vec{a}\cdot\vec{B}=0$

$(x\hat{i}+y\hat{j}+z\hat{k})\cdot(4\hat{i}+2\hat{j})=0$ | $(x\hat{i}+y\hat{j}+z\hat{k})\cdot(-3\hat{i}+2\hat{j})=0$

$4x+2y=0$ | $-3x+2y=0$ $\Rightarrow$ $x=0$, $y=0$

Q) Which one of the following is the unit vector perpendicular to the vectors $4\hat{\mathbf{i}}+2\hat{\mathbf{j}}$ and $-3\hat{\mathbf{i}}+2\hat{\mathbf{j}}$?

(a) $\frac{\hat{\mathbf{i}}+\hat{\mathbf{j}}}{\sqrt{2}}$

(b) $\frac{\hat{\mathbf{i}}-\hat{\mathbf{j}}}{\sqrt{2}}$

(c) $\hat{\mathbf{k}}$

(d) $\frac{\hat{\mathbf{i}}+\hat{\mathbf{j}}+\hat{\mathbf{k}}}{\sqrt{3}}$

Ans: (C)

Q) A force $\vec{F} = \hat{i} + 3\hat{j} + 2\hat{k}$ acts on a particle to displace it from the point $A(\hat{i} + 2\hat{j} - 3\hat{k})$ to the point $B(3\hat{i} - \hat{j} + 5\hat{k})$. The work done by the force will be

(a) 5 units (b) 7 units (c) 9 units (d) 10 units

$\overrightarrow{AB} = (3\hat{i} - \hat{j} + 5\hat{k}) - (\hat{i} + 2\hat{j} - 3\hat{k})$

displacement $= 2\hat{i} - 3\hat{j} + 8\hat{k}$

$W = \vec{F} \cdot \vec{d}$

$= (\hat{i} + 3\hat{j} + 2\hat{k}) \cdot (2\hat{i} - 3\hat{j} + 8\hat{k})$

$= 2 - 9 + 16 = 9$ units

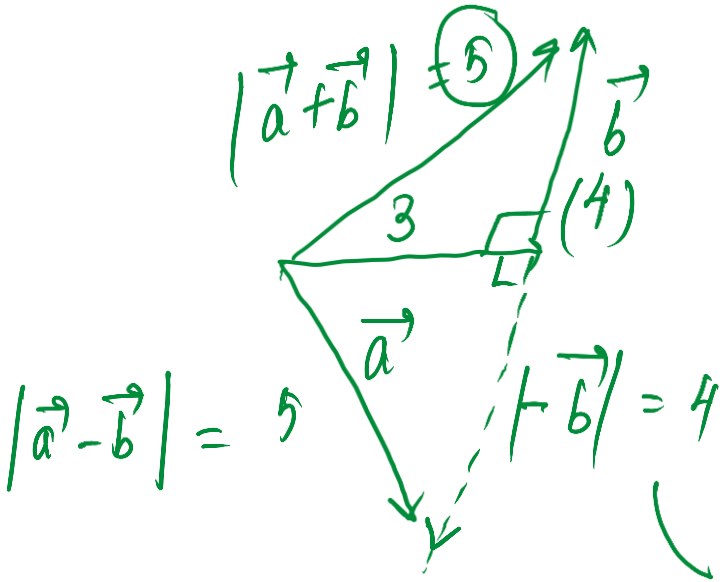
Q) A force $\vec{F} = \hat{i} + 3\hat{j} + 2\hat{k}$ acts on a particle to displace it from the point $A(\hat{i} + 2\hat{j} - 3\hat{k})$ to the point $B(3\hat{i} - \hat{j} + 5\hat{k})$. The work done by the force will be

(a) 5 units (b) 7 units (c) 9 units (d) 10 units

Ans: (c)

Q) If $|\vec{a}| = 3, |\vec{b}| = 4$ and $|\vec{a} - \vec{b}| = 5$, then what is the value of $|\vec{a} + \vec{b}|$?

(a) 8 (b) 6 (c) $5\sqrt{2}$ (d) 5



3, 4 and 5 makes a pythagorean triplet, and so angle between $\vec{a}$ and $-\vec{b}$ = 90° and so $\vec{a}$ and $\vec{b}$ will also have 90°.

Q) If $|\vec{a}| = 3, |\vec{b}| = 4$ and $|\vec{a} - \vec{b}| = 5$, then what is the value of $|\vec{a} + \vec{b}|$?

(a) 8 (b) 6 (c) $5\sqrt{2}$ (d) 5

Ans: (d)

Q) If the magnitude of the sum of two non-zero vectors is equal to the magnitude of their difference, then which one of the following is correct?

(a) The vectors are parallel
(b) The vectors are perpendicular
(c) The vectors are anti-parallel
(d) The vectors must be unit vectors

$$|\vec{a}+\vec{b}| = |\vec{a}-\vec{b}|$$

squaring,

$$2ab\cos\theta = -2ab\cos\theta$$

$$4ab\cos\theta = 0$$

$$\cos\theta = 0$$

$$(\theta = 90^\circ)$$

Q) If the magnitude of the sum of two non-zero vectors is equal to the magnitude of their difference, then which one of the following is correct?

(a) The vectors are parallel
(b) The vectors are perpendicular
(c) The vectors are anti-parallel
(d) The vectors must be unit vectors

Ans: (b)

Q) If $|\vec{a}| = 4, |\vec{b}| = 2$ and the angle between $\vec{a}$ and $\vec{b}$ is $\pi/6$ then $(\vec{a} \times \vec{b})^2$ is equal to

(a) 48 (b) 16

(c) $\vec{a}$ (d) none of these

$|\vec{a} \times \vec{b}| = ab\sin\theta$

$= 4 \times 2 \sin\left(\frac{\pi}{6}\right)$

$= 4$

$|\vec{a} \times \vec{b}|^2 = 16$

Q) If $|\vec{a}| = 4, |\vec{b}| = 2$ and the angle between $\vec{a}$ and $\vec{b}$ is $\pi/6$ then $(\vec{a} \times \vec{b})^2$ is equal to

(a) 48

(b) 16

(c) $\vec{a}$

(d) none of these

Ans: (b)

Q) If $\vec{\mathbf{r}} = x\hat{i} + y\hat{j} + z\hat{k}$, then what is $\vec{\mathbf{r}} \cdot (\hat{i} + \hat{j} + \hat{k})$ equal to ?

(a) x (b) $x + y$ (c) $-(x + y + z)$ (d) $(x + y + z)$

Q)If $\vec{\mathbf{r}} = x\hat{i} + y\hat{j} + z\hat{k}$, then what is $\vec{\mathbf{r}} \cdot (\hat{i} + \hat{j} + \hat{k})$ equal to ?

(a) x (b) $x + y$ (c) $-(x + y + z)$ (d) $(x + y + z)$

Ans: (d)

Q) The vectors $\overrightarrow{AB} = 3\hat{i} + 4\hat{k}$ & $\overrightarrow{AC} = 5\hat{i} - 2\hat{j} + 4\hat{k}$ are the sides of a triangle ABC. The length of the median through A is

(a) $\sqrt{288}$ (b) $\sqrt{18}$ (c) $\sqrt{72}$ (d) $\sqrt{33}$

Q) The vectors $\overrightarrow{AB} = 3\hat{i} + 4\hat{k}$ & $\overrightarrow{AC} = 5\hat{i} - 2\hat{j} + 4\hat{k}$ are the sides of a triangle ABC. The length of the median through A is

(a) $\sqrt{288}$ (b) $\sqrt{18}$ (c) $\sqrt{72}$ (d) $\sqrt{33}$

Ans: (d)

Q) The volume of the parallelopiped whose sides are given by $\overrightarrow{OA} = 2i - 2j$, $\overrightarrow{OB} = i + j - k$, $\overrightarrow{OC} = 3i - k$, is

(a) $\frac{4}{13}$

(b) 4

(c) $\frac{2}{7}$

(d) none of these

Q) The volume of the parallelopiped whose sides are given by

$\overrightarrow{OA} = 2i - 2j$, $\overrightarrow{OB} = i + j - k$, $\overrightarrow{OC} = 3i - k$, is

scalar triple product.

(a) $\frac{4}{13}$

(b) 4

(c) $\frac{2}{7}$

(d) none of these

Ans: (d)

Q) If $\vec{a}$ and $\vec{b}$ are two unit vectors such that $\vec{a}+2\vec{b}$ and $5\vec{a}-4\vec{b}$ are perpendicular to each other then the angle between $\vec{a}$ and $\vec{b}$ is

(a) $45°$

(b) $60°$

(c) $\cos^{-1}\left(\frac{1}{3}\right)$

(d) $\cos^{-1}\left(\frac{2}{7}\right)$

Q) If $\vec{a}$ and $\vec{b}$ are two unit vectors such that $\vec{a}+2\vec{b}$ and $5\vec{a}-4\vec{b}$ are perpendicular to each other then the angle between $\vec{a}$ and $\vec{b}$ is

(a) $45°$

(b) $60°$

(c) $\cos^{-1}\left(\frac{1}{3}\right)$

(d) $\cos^{-1}\left(\frac{2}{7}\right)$

Ans: (b)

Q) Let $\vec{u}, \vec{v}$ and $\vec{w}$ be vectors such that $\vec{u} + \vec{v} + \vec{w} = 0$. If $|\vec{u}| = 3, |\vec{v}| = 4$ and $|\vec{w}| = 5$, then $\vec{u}.\vec{v} + \vec{v}.\vec{w} + \vec{w}.\vec{u}$ is

(a) 47 (b) -25 (c) 0 (d) 25

Q) Let $\vec{u}, \vec{v}$ and $\vec{w}$ be vectors such that $\vec{u} + \vec{v} + \vec{w} = 0$. If $|\vec{u}| = 3, |\vec{v}| = 4$ and $|\vec{w}| = 5$, then $\vec{u}.\vec{v} + \vec{v}.\vec{w} + \vec{w}.\vec{u}$ is

(a) 47 (b) -25 (c) 0 (d) 25

Ans: (b)

Q) If $\mathbf{a}$ and $\mathbf{b}$ are unit vectors and θ is the angle between them, then what is $\sin^2\left(\frac{\theta}{2}\right)$ equal to?

(a) $\frac{|\mathbf{a}+\mathbf{b}|^2}{4}$

(b) $\frac{|\mathbf{a}-\mathbf{b}|^2}{4}$

(c) $\frac{|\mathbf{a}+\mathbf{b}|^2}{2}$

(d) $\frac{|\mathbf{a}-\mathbf{b}|^2}{2}$

Q) If $\mathbf{a}$ and $\mathbf{b}$ are unit vectors and θ is the angle between them, then what is $\sin^2\left(\frac{\theta}{2}\right)$ equal to?

(a) $\frac{|\mathbf{a}+\mathbf{b}|^2}{4}$ (b) $\frac{|\mathbf{a}-\mathbf{b}|^2}{4}$

(c) $\frac{|\mathbf{a}+\mathbf{b}|^2}{2}$ (d) $\frac{|\mathbf{a}-\mathbf{b}|^2}{2}$

Ans: (b)

Q) The scalar $\vec{A}.(\vec{B}+\vec{C})\times(\vec{A}+\vec{B}+\vec{C})$ equals :

(a) 0

(b) $[\vec{A}\ \vec{B}\ \vec{C}]+[\vec{B}\ \vec{C}\ \vec{A}]$

(c) $[\vec{A}\ \vec{B}\ \vec{C}]$

(d) None of these

Q) The scalar $\vec{A}.(\vec{B}+\vec{C})\times(\vec{A}+\vec{B}+\vec{C})$ equals :

(a) 0

(b) $[\vec{A}\ \vec{B}\ \vec{C}]+[\vec{B}\ \vec{C}\ \vec{A}]$

(c) $[\vec{A}\ \vec{B}\ \vec{C}]$

(d) None of these

Ans: (a)

Q) What is the moment about the point $\hat{i}+2\hat{j}+3\hat{k}$, of a force represented by $\hat{i}+\hat{j}+\hat{k}$, acting through the point $-2\hat{i}+3\hat{j}+\hat{k}$?

(a) $2\hat{i}+\hat{j}+2\hat{k}$

(b) $\hat{i}-\hat{j}+3\hat{k}$

(c) $3\hat{i}+2\hat{j}-\hat{k}$

(d) $3\hat{i}+\hat{j}-4\hat{k}$

Q) What is the moment about the point $\hat{i}+2\hat{j}+3\hat{k}$, of a force represented by $\hat{i}+\hat{j}+\hat{k}$, acting through the point $-2\hat{i}+3\hat{j}+\hat{k}$?

(a) $2\hat{i}+\hat{j}+2\hat{k}$

(b) $\hat{i}-\hat{j}+3\hat{k}$

(c) $3\hat{i}+2\hat{j}-\hat{k}$

(d) $3\hat{i}+\hat{j}-4\hat{k}$

Ans: (d)

Q) If the vectors $\alpha\hat{i}+\alpha\hat{j}+\gamma\hat{k}, \hat{i}+\hat{k}$ and $\gamma\hat{i}+\gamma\hat{j}+\beta\hat{k}$ lie on a plane, where α, β and γ are distinct non-negative numbers, then γ is

(a) Arithmetic mean of α and β

(b) Geometric mean of α and β

(c) Harmonic mean of α and β

(d) None of the above

Q) If the vectors $\alpha\hat{i}+\alpha\hat{j}+\gamma\hat{k}, \hat{i}+\hat{k}$ and $\gamma\hat{i}+\gamma\hat{j}+\beta\hat{k}$ lie on a plane, where α, β and γ are distinct non-negative numbers, then γ is

(a) Arithmetic mean of α and β

(b) Geometric mean of α and β

(c) Harmonic mean of α and β

(d) None of the above

Ans: (b)

Q) If $|\vec{a}| = 3, |\vec{b}| = 4$, then for what value of λ is $(\vec{a} + \lambda\vec{b})$ perpendicular to $(\vec{a} - \lambda\vec{b})$?

(a) $\frac{3}{4}$

(b) $\frac{4}{3}$

(c) $\frac{9}{16}$

(d) $\frac{3}{5}$

Q) If $|\vec{a}| = 3, |\vec{b}| = 4$, then for what value of λ is $(\vec{a} + \lambda\vec{b})$ perpendicular to $(\vec{a} - \lambda\vec{b})$?

(a) $\frac{3}{4}$

(b) $\frac{4}{3}$

(c) $\frac{9}{16}$

(d) $\frac{3}{5}$

Ans: (a)

Q) If the vectors $\vec{K}$ and $\vec{A}$ are parallel to each other, then what is $k\vec{K} \times \vec{A}$ equal to ?

(a) $k^2\vec{A}$ (b) $\vec{0}$ (c) $-k^2\vec{A}$ (d) $\vec{A}$

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Ans: (b)

NDA 2 2024

LIVE

MATHS REVISION

CLASS 6

NAVJYOTI SIR

SSBCrack EXAMS

REVISION TOPICS :

(12/08/24)

- 3D Geometry
- Permutations and Combinations