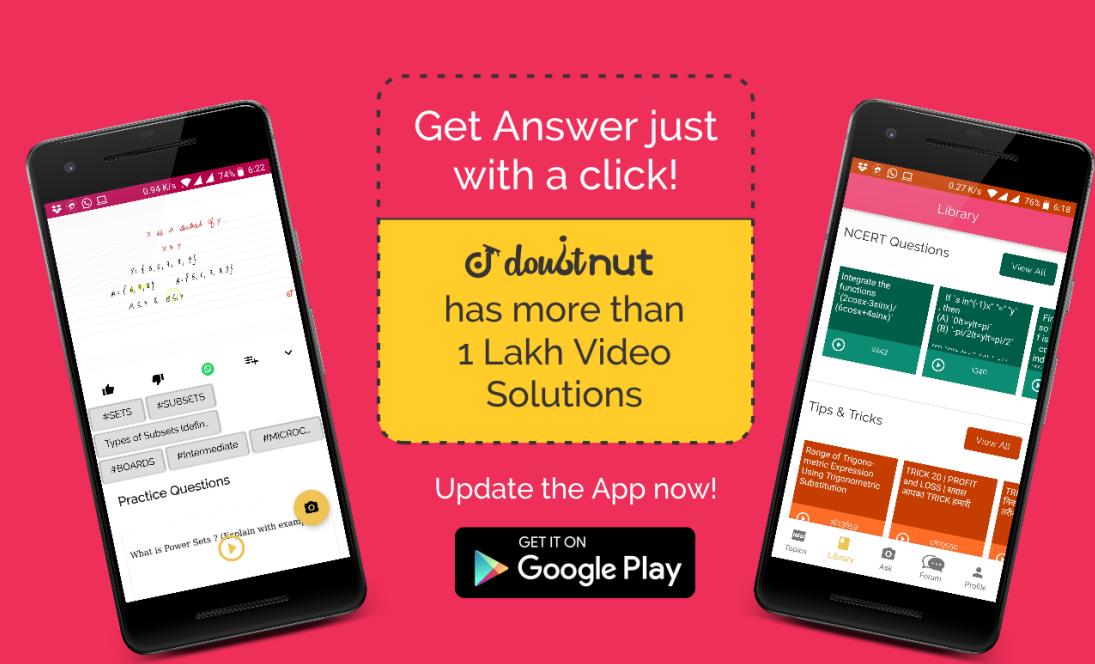


## VECTOR ALGEBRA

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Ques No.	Question
1 - 11856	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>36. If <math>\vec{a}</math>, <math>\vec{b}</math>, <math>\vec{c}</math> and <math>\vec{d}</math> are unit vectors such that <math>(\vec{a} \times \vec{b}) \cdot \vec{c} \times \vec{d} = 1</math> and <math>\vec{a} \cdot \vec{c} = \frac{1}{2}</math> then a) <math>\vec{a}</math>, <math>\vec{b}</math> and <math>\vec{c}</math> are non-coplanar b) <math>\vec{b}</math>, <math>\vec{c}</math>, <math>\vec{d}</math> are non-coplanar c) <math>\vec{b}</math>, <math>\vec{d}</math> are non parallel d) <math>\vec{a}</math>, <math>\vec{d}</math> are parallel and <math>\vec{b}</math>, <math>\vec{c}</math> are parallel</p> <p> <a href="#">Watch Free Video Solution on Doubtnut</a></p>
2 - 38539	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>If the vectors <math>\vec{a}</math>, <math>\vec{b}</math>, and <math>\vec{c}</math> form the sides <math>BC</math>, <math>CA</math> and <math>AB</math>, respectively, of triangle <math>ABC</math>, then <math>\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a} = 0</math> b) <math>\vec{a} \times \vec{b} = \vec{b} \times \vec{c} = \vec{c} \times \vec{a}</math> c) <math>\vec{a} \cdot \vec{b} = \vec{b} \cdot \vec{c} = \vec{c} \cdot \vec{a}</math> d) <math>\vec{a} \times \vec{b} + \vec{b} \times \vec{c} + \vec{c} \times \vec{a} = 0</math></p> <p> <a href="#">Watch Free Video Solution on Doubtnut</a></p>
3 - 38541	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>Two adjacent sides of a parallelogram <math>ABCD</math> are given by <math>\vec{AB} = 2\hat{i} + 10\hat{j} + 11\hat{k}</math> and <math>\vec{AD} = -\hat{i} + 2\hat{j} + 2\hat{k}</math>. The side <math>AD</math> is rotated by an acute angle <math>\alpha</math> in the plane of the parallelogram so that <math>AD</math> becomes <math>AD'</math>. If <math>AD'</math> makes a right angle with the side <math>AB</math>, then the cosine of the angle <math>\alpha</math> is given by a) <math>\frac{8}{9}</math> b) <math>\frac{\sqrt{17}}{9}</math> c) <math>\frac{1}{9}</math> d) <math>\frac{4\sqrt{5}}{9}</math></p> <p> <a href="#">Watch Free Video Solution on Doubtnut</a></p>
	 <p>The banner features two smartphones. The left phone shows a handwritten-style interface for solving math problems, with a yellow callout box stating "doubtnut has more than 1 Lakh Video Solutions". The right phone shows the app's main menu with sections like "NCERT Questions", "Tips &amp; Tricks", and "Library". A central yellow box contains the text "Get Answer just with a click!" and the "GET IT ON Google Play" button.</p>
4 - 38545	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>The value of <math>a</math> so that the volume of parallelepiped formed by <math>\hat{i} + a\hat{j} + \hat{k}</math>, <math>\hat{j} + a\hat{k}</math> and <math>\hat{i} + \hat{k}</math> is minimum is a) <math>-3</math> b) <math>1</math> c) <math>1/\sqrt{3}</math> d) <math>\sqrt{3}</math></p> <p> <a href="#">Watch Free Video Solution on Doubtnut</a></p>
5 - 38554	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>If <math>V</math> be the volume of a tetrahedron and <math>V'</math> be the volume of another tetrahedron formed by the centroids of faces of the previous tetrahedron and <math>V = KV'</math>, then <math>K</math> is equal to a) <math>9</math> b) <math>12</math> c) <math>27</math> d) <math>81</math></p> <p> <a href="#">Watch Free Video Solution on Doubtnut</a></p>
6 - 38556	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p>

$A(\vec{a}), B(\vec{b}), C(\vec{c})$  are the vertices of the triangle ABC and  $R(\vec{r})$  is any point in the plane of triangle ABC, then  
 r.  $(\vec{a} \times \vec{b} + \vec{b} \times \vec{c} + \vec{c} \times \vec{a})$  is always equal to

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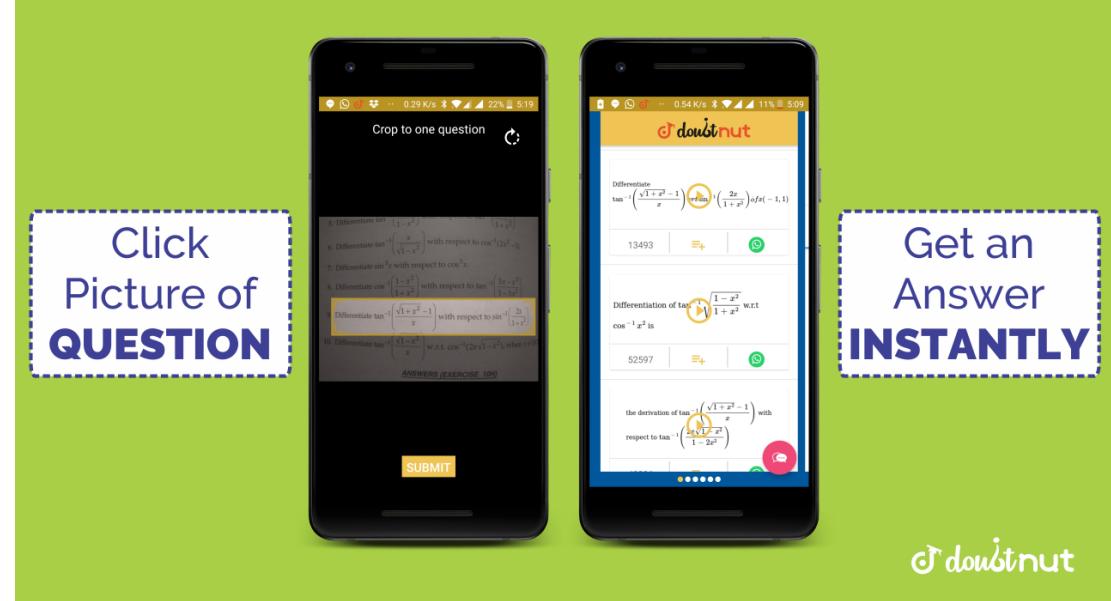
If

7 - 38561

$\vec{a} = 2\hat{i} + \hat{j} + \hat{k}$ ,  $\vec{b} = \hat{i} + 2\hat{j} + 2\hat{k}$ ,  $\vec{c} = \hat{i} + \hat{j} + 2\hat{k}$  and  $(1+\alpha)\hat{i} + \beta(1+\alpha)\hat{j} + \gamma(1+\alpha)(1+\beta)\hat{k} = \vec{a} \times (\vec{b} \times \vec{c})$ , then  $\alpha, \beta$  and  $\gamma$  are a.  $-2, -4, -\frac{2}{3}$  b.  $2, -4, \frac{2}{3}$  c.  $-2, 4, \frac{2}{3}$  d.  $2, 4, -\frac{2}{3}$

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Let  $\vec{a} = \hat{i} - \hat{j}$ ,  $\vec{b} = \hat{j} - \hat{k}$  and  $\vec{c} = \hat{k} - \hat{i}$ . If  $\vec{d}$  is a unit vector such that  $\vec{a} \cdot \vec{d} = 0 = [\vec{b} \vec{c} \vec{d}]$ , then  $d$  equals a.  $\pm \frac{\hat{i} + \hat{j} - 2\hat{k}}{\sqrt{6}}$  b.  $\pm \frac{\hat{i} + \hat{j} - \hat{k}}{\sqrt{3}}$  c.  $\pm \frac{\hat{i} + \hat{j} + \hat{k}}{\sqrt{3}}$  d.  $\pm \hat{k}$

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9 - 38593

If  $\vec{a}' = \hat{i} + \hat{j}$ ,  $\vec{b}' = \hat{i} - \hat{j} + 2\hat{k}$  and  $\vec{c}' = 2\hat{i} + \hat{j} - \hat{k}$ , then the altitude of the parallelepiped formed by the vectors  $\vec{a}$ ,  $\vec{b}$  and  $\vec{c}$  having base formed by  $\vec{b}$  and  $\vec{c}$  is (where  $\vec{a}'$  is reciprocal vector of  $\vec{a}$ )

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If  $\vec{a} = \hat{i} + \hat{j}$ ,  $\vec{b} = \hat{j} + \hat{k}$ ,  $\vec{c} = \hat{k} + \hat{i}$ , then in the reciprocal system of vectors  $\vec{a}, \vec{b}, \vec{c}$  reciprocal  $\vec{a}'$  of vector  $\vec{a}$  is a.  $\frac{\hat{i} + \hat{j} + \hat{k}}{2}$  b.  $\frac{\hat{i} - \hat{j} + \hat{k}}{2}$  c.  $\frac{-\hat{i} - \hat{j} + \hat{k}}{2}$  d.  $\frac{\hat{i} + \hat{j} - \hat{k}}{2}$

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Let  $\vec{a} = \hat{i} + \hat{j} + \hat{k}$ ,  $\vec{b} = \hat{i} - \hat{j} + \hat{k}$  and  $\vec{c} = \hat{i} - \hat{j} - \hat{k}$  be three vectors. A vector  $\vec{v}$  in the plane of  $\vec{a}$  and  $\vec{b}$ , whose projection on  $\vec{c}$  is  $\frac{1}{\sqrt{3}}$  is given by a.  $\hat{i} - 3\hat{j} + 3\hat{k}$  b.  $-3\hat{i} - 3\hat{j} + 3\hat{k}$  c.  $3\hat{i} - \hat{j} + 3\hat{k}$  d.  $\hat{i} + 3\hat{j} - 3\hat{k}$

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If the line segment joining the point  $A(a,b)$  and  $B(c,d)$  subtends an angle  $\theta$  at the origin. Prove that  $\cos \theta = \frac{ab+cd}{\sqrt{(a^2+b^2)(c^2+d^2)}}$

1. The points on  $x+y=4x+y=4$  that lie at a unit distance from the line  $4x+3y-10=4x+3y-10$  are

2. Find the degree measures corresponding to the following radian measures (use  $\pi=22/7$ ) (i)  $\frac{11}{16}\pi$  (ii)  $4$  (iii)  $\frac{5\pi}{3}$  (iv)  $\frac{11}{12}\pi$

Find the radian measure corresponding to the following degree measures: (i)  $47^\circ 30'$  (ii)  $15^\circ$  (iii)  $15^\circ$  (iv)  $15^\circ$

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find the equation of tangent a

Find the equation of tangent to the curve 'x=a(theta)'

Find the equation of tangent to the curve 'x=a(theta)'

Find the equation of tangent to the curve 'y=sin^(1/2)x'

If '3x^2-4' is a tangent to a circle whose center is

Find the equation of tangent to 'y=int\_(x^2)^x(x^3)(...)

K/s 90% 10:18

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- 12 - 38655 Let two non-collinear unit vector  $\hat{a}$  and  $\hat{b}$  form an acute angle. A point  $P$  moves so that at any time  $t$ , the position vector  $OP$  (where  $O$  is the origin) is given by  $\hat{a} \cos t + \hat{b} \sin t$ . When  $P$  is farthest from origin  $O$ , let  $M$  be the length of  $OP$  and  $\hat{u}$  be the unit vector along  $OP$ . Then (a)  $\hat{u} = \frac{\hat{a} + \hat{b}}{|\hat{a} + \hat{b}|}$  and  $M = \left(1 + \hat{a}\hat{b}\right)^{1/2}$  (b)  $\hat{u} = \frac{\hat{a} - \hat{b}}{|\hat{a} - \hat{b}|}$  and  $M = \left(1 + \hat{a}\hat{b}\right)^{1/2}$  (c)  $\hat{u} = \frac{\hat{a} + \hat{b}}{|\hat{a} + \hat{b}|}$  and  $M = \left(1 + 2\hat{a}\hat{b}\right)^{1/2}$  (d)  $\hat{u} = \frac{\hat{a} - \hat{b}}{|\hat{a} - \hat{b}|}$  and  $M = \left(1 + 2\hat{a}\hat{b}\right)^{1/2}$

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- 13 - 38656 JEE Mains Super-40 Revision Series - VECTOR ALGEBRA  
Let  $\vec{a} = \hat{i} + 2\hat{j} + \hat{k}$ ,  $\vec{b} = \hat{i} - \hat{j} + \hat{k}$  and  $\vec{c} = \hat{i} + \hat{j} - \hat{k}$ . A vector in the plane of  $\vec{a}$  and  $\vec{b}$  whose projection on  $\vec{c}$  is  $1/\sqrt{3}$  is a.  $4\hat{i} - \hat{j} + 4\hat{k}$  b.  $3\hat{i} + \hat{j} + 3\hat{k}$  c.  $2\hat{i} + \hat{j} + 2\hat{k}$  d.  $4\hat{i} + \hat{j} - 4\hat{k}$

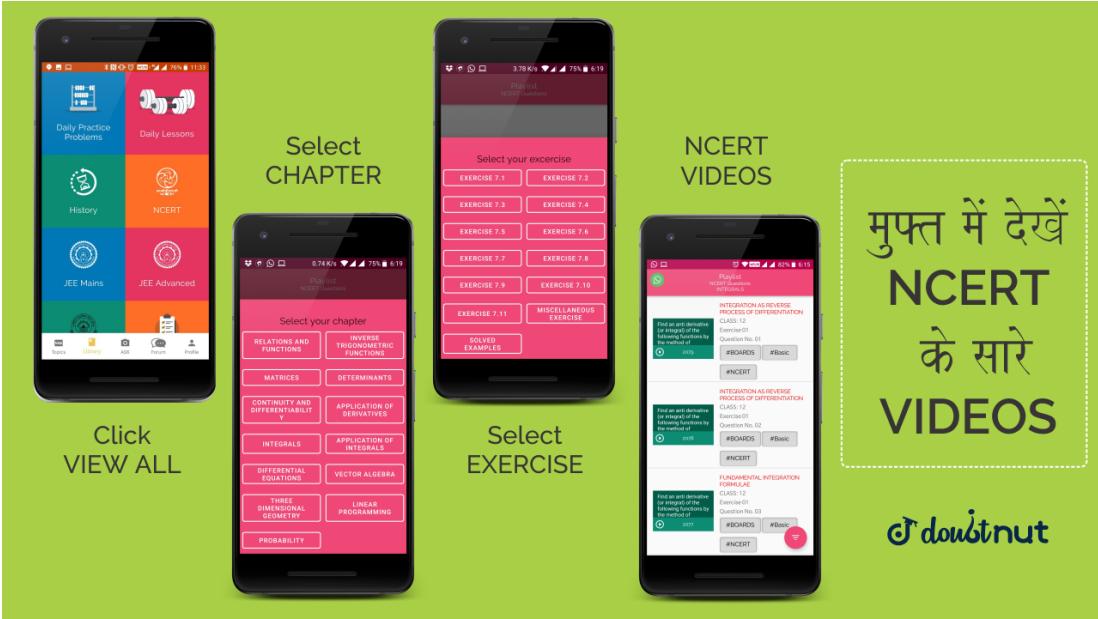
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The unit vector which is orthogonal to the vector  $5\hat{j} + 2\hat{j} + 6\hat{k}$  and is coplanar with vectors  $2\hat{i} + \hat{j} + \hat{k}$  and  $\hat{i} - \hat{j} + \hat{k}$  is a.  $\frac{2\hat{i} - 6\hat{j} + \hat{k}}{\sqrt{41}}$  b.  $\frac{2\hat{i} - 3\hat{j}}{\sqrt{13}}$  c.  $\frac{3\hat{i} - \hat{k}}{\sqrt{10}}$  d.  $\frac{4\hat{i} + 3\hat{j} - 3\hat{k}}{\sqrt{34}}$

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Let  $\vec{a} = 2\hat{i} + \hat{j} + \hat{k}$ ,  $\vec{b} = \hat{i} + 2\hat{j} - \hat{k}$  and a unit vector  $\vec{c}$  be coplanar. If  $\vec{c}$  is perpendicular to  $\vec{a}$ , then  $\vec{c}$  is a.  $\frac{1}{\sqrt{2}}(-\hat{j} + \hat{k})$  b.  $\frac{1}{\sqrt{3}}(-\hat{i} - \hat{j} - \hat{k})$  c.  $\frac{1}{\sqrt{5}}(-\hat{k} - 2\hat{j})$  d.  $\frac{1}{\sqrt{3}}(\hat{i} - \hat{j} - \hat{k})$

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16 - 38687

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If  $\vec{a}$ ,  $\vec{b}$  and  $\vec{c}$  are non-coplanar unit vectors such that  $\vec{a} \times (\vec{b} \times \vec{c}) = \frac{\vec{b} + \vec{c}}{\sqrt{2}}$ , then the angle between  $\vec{a}$  and  $\vec{b}$  is a.  $3\pi/4$  b.  $\pi/4$  c.  $\pi/2$  d.  $\pi$

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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  $\vec{u} \cdot \vec{v} + \vec{v} \cdot \vec{w} + \vec{w} \cdot \vec{u}$  is 47 b. -25 c. 0 d. 25

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If  $\vec{a}$ ,  $\vec{b}$  and  $\vec{c}$  are three non-coplanar vectors, then  $(\vec{a} + \vec{b} + \vec{c})(\vec{a} + \vec{b}) \times (\vec{a} + \vec{c})$  equals 0 b.  $[\vec{a} \vec{b} \vec{c}]$  c.  $2[\vec{a} \vec{b} \vec{c}]$  d.  $-[\vec{a} \vec{b} \vec{c}]$

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$\vec{p}$ ,  $\vec{q}$ , and  $\vec{r}$  are three mutually perpendicular vectors of the same magnitude. If vector  $\vec{x}$  satisfies the equation  $\vec{p} \times ((\vec{x} - \vec{q}) \times \vec{p}) + \vec{q} \times ((\vec{x} - \vec{r}) \times \vec{q}) + \vec{r} \times ((\vec{x} - \vec{p}) \times \vec{r}) = 0$ , then  $\vec{x}$  is given by a.  $\frac{1}{2}(\vec{p} + \vec{q} - 2\vec{r})$  b.  $\frac{1}{2}(\vec{p} + \vec{q} + \vec{r})$  c.  $\frac{1}{3}(\vec{p} + \vec{q} + \vec{r})$  d.  $\frac{1}{3}(2\vec{p} + \vec{q} - \vec{r})$

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Let vectors  $\vec{a}$ ,  $\vec{b}$ ,  $\vec{c}$ , and  $\vec{d}$  be such that  $(\vec{a} \times \vec{b}) \times (\vec{c} \times \vec{d}) = 0$ . Let  $P_1$  and  $P_2$  be planes determined by the pair of vectors  $\vec{a}$ ,  $\vec{b}$ , and  $\vec{c}$ ,  $\vec{d}$ , respectively. Then the angle between  $P_1$  and  $P_2$  is a. 0 b.  $\pi/4$  c.  $\pi/3$  d.  $\pi/2$

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If the two diagonals of one its faces are  $6\hat{i} + 6\hat{k}$  and  $4\hat{j} + 2\hat{k}$  and of the edges not containing the given diagonals is  $c = 4\hat{j} - 8\hat{k}$ , then the volume of a parallelepiped is a. 60 b. 80 c. 100 d. 120

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The volume of a tetrahedron formed by the coterminous edges  $\vec{a}$ ,  $\vec{b}$ , and  $\vec{c}$  is 3. Then the volume of the parallelepiped formed by the coterminous edges  $\vec{a} + \vec{b}$ ,  $\vec{b} + \vec{c}$  and  $\vec{c} + \vec{a}$  is a. 18 b. 36 c. 36 d. 9

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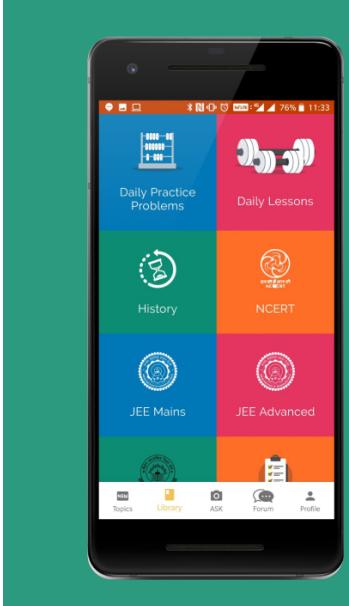
23 - 38714

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If  $\vec{a}$ ,  $\vec{b}$ , and  $\vec{c}$  are three mutually orthogonal unit vectors, then the triple product  $[\vec{a} + \vec{b} + \vec{c}] [\vec{a} + \vec{b} \vec{b} + \vec{c}]$  equals a. 0 b. 1 or -1 c. 1 d. 3

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24 - 38715	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>Vector <math>\vec{c}</math> is perpendicular to vectors <math>\vec{a} = (2, -3, 1)</math> and <math>\vec{b} = (1, -2, 3)</math> and satisfies the condition <math>\vec{c} \cdot (\vec{i} + 2\vec{j} - 7\vec{k}) = 10</math>. Then vector <math>\vec{c}</math> is equal to a. <math>(7, 5, 1)</math> b. <math>(-7, -5, -1)</math> c. <math>(1, 1, -1)</math> d. none of these</p> <p><a href="#">Watch Free Video Solution on Doubtnut</a></p>
25 - 38719	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>The scalar <math>\vec{A}(\vec{B} + \vec{C}) \times (\vec{A} + \vec{B} + \vec{C})</math> equals a. 0 b. <math>[\vec{A} \vec{B} \vec{C}]</math> c. <math>[\vec{B} \vec{C} \vec{A}]</math> d. none of these</p> <p><a href="#">Watch Free Video Solution on Doubtnut</a></p>
26 - 38720	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>The volume of the parallelepiped whose sides are given by <math>\vec{OA} = 2\vec{i} - 2\vec{j}</math>, <math>\vec{OB} = \vec{i} + \vec{j} - k\vec{k}</math> and <math>\vec{OC} = 3\vec{i} - \vec{k}</math> is a. <math>\frac{4}{13}</math> b. 4 c. <math>\frac{2}{7}</math> d. 2</p> <p><a href="#">Watch Free Video Solution on Doubtnut</a></p>
27 - 38721	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>For non-zero vectors <math>\vec{a}</math>, <math>\vec{b}</math>, and <math>\vec{c}</math>, <math>\left  (\vec{a} \times \vec{b}) \cdot \vec{c} \right  =  \vec{a}   \vec{b}   \vec{c} </math> holds if and only if a. <math>\vec{a} \cdot \vec{b} = 0</math>, <math>\vec{b} \cdot \vec{c} = 0</math> b. <math>\vec{b} \cdot \vec{c} = 0</math>, <math>\vec{c} \cdot \vec{a} = 0</math> c. <math>\vec{c} \cdot \vec{a} = 0</math>, <math>\vec{a} \cdot \vec{b} = 0</math> d. <math>\vec{a} \cdot \vec{b} = 0</math>, <math>\vec{b} \cdot \vec{c} = 0</math>, <math>\vec{c} \cdot \vec{a} = 0</math></p> <p><a href="#">Watch Free Video Solution on Doubtnut</a></p>
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28 - 38725	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p><math>\vec{b}</math> and <math>\vec{c}</math> are unit vectors. Then for any arbitrary vector <math>\vec{a}</math>, <math>\left( (\vec{a} \times \vec{b}) + (\vec{a} \times \vec{c}) \right) \times (\vec{b} \times \vec{c})</math> is always equal to a. <math> \vec{a} </math> b. <math>\frac{1}{2}  \vec{a} </math> c. <math>\frac{1}{3}  \vec{a} </math> d. none of these</p> <p><a href="#">Watch Free Video Solution on Doubtnut</a></p>
29 - 38727	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>Value of <math>[\vec{a} \times \vec{b} \vec{a} \times \vec{c} \vec{d}]</math> is always equal to a. <math>[\vec{a} \vec{d}] [\vec{a} \vec{b} \vec{c}]</math> b. <math>[\vec{a} \vec{c}] [\vec{a} \vec{b} \vec{d}]</math> c. <math>[\vec{a} \vec{b}] [\vec{a} \vec{b} \vec{d}]</math> d. none of these</p> <p><a href="#">Watch Free Video Solution on Doubtnut</a></p>
30 - 38731	<p><b>JEE Mains Super-40 Revision Series - VECTOR ALGEBRA</b></p> <p>If <math>4\vec{a} + 5\vec{b} + 9\vec{c} = 0</math>, then <math>(\vec{a} \times \vec{b}) \times [(\vec{b} \times \vec{c}) \times (\vec{c} \times \vec{a})]</math> is equal to a vector perpendicular to the plane of <math>a, b, c</math> b. a scalar quantity c. <math>\vec{0}</math> d. none of these</p>

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Let  $P, Q, R$  and  $S$  be the points on the plane with position vectors  $-2\hat{i} - \hat{j}, 4\hat{i}, 3\hat{i} + 3\hat{j}$  and  $-3\hat{j} + 2\hat{k}$ , respectively. The quadrilateral  $PQRS$  must be a Parallelogram, which is neither a rhombus nor a rectangle Square Rectangle, but not a square Rhombus, but not a square

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32 - 38747

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The condition for equations  $\vec{r} \times \vec{a} = \vec{b}$  and  $\vec{r} \times \vec{c} = \vec{d}$  to be consistent is  $\vec{b} \cdot \vec{c} = \vec{a} \cdot \vec{d}$  b.  $\vec{a} \cdot \vec{b} = \vec{c} \cdot \vec{d}$  c.  $\vec{b} \cdot \vec{c} + \vec{a} \cdot \vec{d} = 0$  d.  $\vec{a} \cdot \vec{b} + \vec{c} \cdot \vec{d} = 0$

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**JEE Mains Super-40 Revision Series - VECTOR ALGEBRA**

If  $\vec{r} \cdot \vec{a} = \vec{r} \cdot \vec{b} = \vec{r} \cdot \vec{c} = \frac{1}{2}$  or some nonzero vector  $\vec{r}$ , then the area of the triangle whose vertices are  $A(\vec{a}), B(\vec{b})$  and  $C(\vec{c})$  is (  $\vec{a}, \vec{b}, \vec{c}$  are non-coplanar) a.  $|\vec{a} \cdot \vec{b} \cdot \vec{c}|$  b.  $|\vec{r}|$  c.  $|\vec{a} \cdot \vec{b} \cdot \vec{c}| \cdot |\vec{r}|$  d. none of these

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34 - 38752

**JEE Mains Super-40 Revision Series - VECTOR ALGEBRA**

If  $(\vec{a} \times \vec{b}) \times (\vec{b} \times \vec{c}) = \vec{b}$ , where  $\vec{a}, \vec{b}$ , and  $\vec{c}$  are nonzero vectors, then  $\vec{a}, \vec{b}$ , and  $\vec{c}$  can be coplanar  $\vec{a}, \vec{b}$ , and  $\vec{c}$  must be coplanar  $\vec{a}, \vec{b}$ , and  $\vec{c}$  cannot be coplanar none of these

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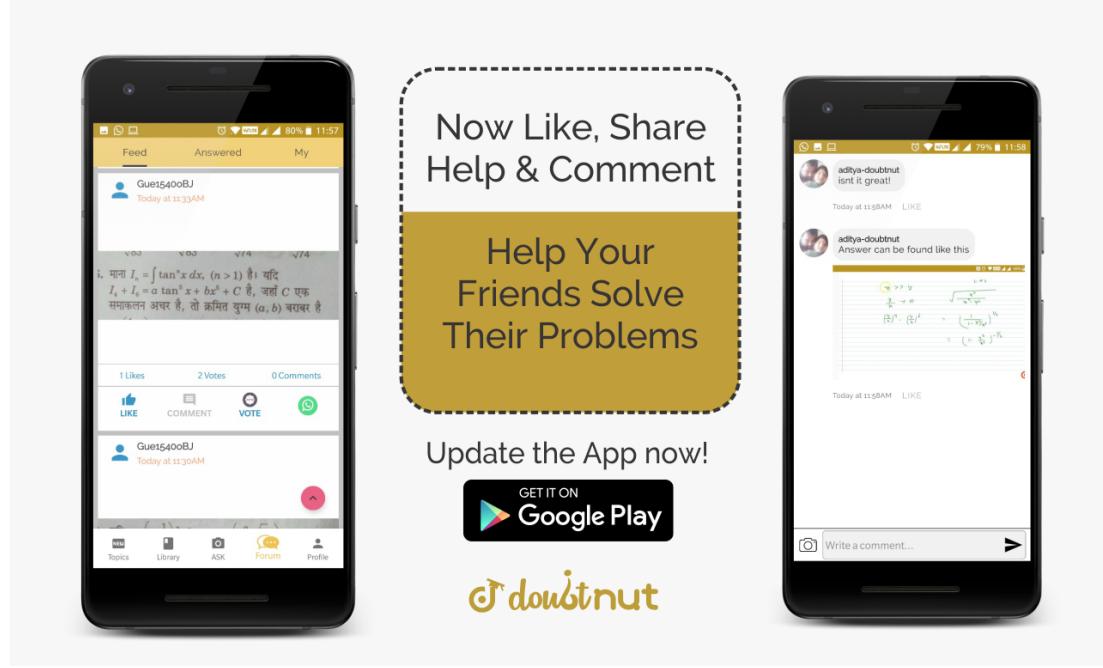
35 - 38765

**JEE Mains Super-40 Revision Series - VECTOR ALGEBRA**

Let  $\vec{V} = 2\hat{i} + \hat{j} - \hat{k}$  and  $\vec{W} = \hat{i} + 3\hat{k}$ . If  $\vec{U}$  is a unit vector, then the maximum value of the scalar triple product  $[UVW]$  is -1 b.  $\sqrt{10} + \sqrt{6}$  c.  $\sqrt{59}$  d.  $\sqrt{60}$

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36 - 38767

**JEE Mains Super-40 Revision Series - VECTOR ALGEBRA**

If  $\vec{a}$ ,  $\vec{b}$  and  $\vec{c}$  are unit coplanar vectors, then the scalar triple product  $\left[ 2\vec{a} - \vec{b}, 2\vec{b} - \vec{c}, 2\vec{c} - \vec{a} \right]$  is 0 b. 1 c.  $-\sqrt{3}$  d.  $\sqrt{3}$

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37 - 43977

**JEE Mains Super-40 Revision Series - VECTOR ALGEBRA**

If  $\vec{a}$ ,  $\vec{b}$  and  $\vec{c}$  are unit vectors, then  $\left| \vec{a} - \vec{b} \right|^2 + \left| \vec{b} - \vec{c} \right|^2 + \left| \vec{c} - \vec{a} \right|^2$  does not exceed 4 b. 9 c. 8 d. 6

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38 - 137294

**JEE Mains Super-40 Revision Series - VECTOR ALGEBRA**

Let  $\vec{a} = 2\hat{i} + \hat{j} - 2\hat{k}$ ,  $\vec{b} = \hat{i} + \hat{j}$ . If  $\vec{c}$  is a vector such that  $\vec{a} \cdot \vec{c} = |\vec{c}|$ ,  $|\vec{c} - \vec{a}| = 2\sqrt{2}$  and the angle between  $\vec{a} \times \vec{b}$  and  $\vec{c}$  is  $30^\circ$ , then  $\left| (\vec{a} \times \vec{b}) \times \vec{c} \right|$  equals :

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39 - 336754

**JEE Mains Super-40 Revision Series - VECTOR ALGEBRA**

If  $\vec{a} \perp \vec{b}$ , then vector  $\vec{v}$  in terms of  $\vec{a}$  and  $\vec{b}$  satisfying the equations  $\vec{v} \cdot \vec{a} = 0$  and  $\vec{v} \cdot \vec{b} = 1$  and  $\left[ \vec{v} \vec{a} \vec{b} \right] = 1$  is

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Let  $\vec{a}$  and  $\vec{b}$  be the two unit vectors such that angle between them is  $60^\circ$ . Then  $|\vec{a} - \vec{b}|$  is equal to: (a)  $\sqrt{5}$  (b)  $\sqrt{3}$  (c) 0 (d) 1 (e)  $\sqrt{2}$

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