



Video Solution on Website:-

<https://physicsaholics.com/home/courseDetails/43>

Video Solution on YouTube:-

<https://youtu.be/kmKmoOsWI5k>

Written Solution on Website:-

<https://physicsaholics.com/note/notesDetails/84>

Q 1. Direction of unit vector of vector  $\vec{A}$  is:

- (a) Always in the direction of  $\vec{A}$
- (b) Always opposite to the direction of  $\vec{A}$
- (c) Always perpendicular to the direction of  $\vec{A}$
- (d) In any random direction.

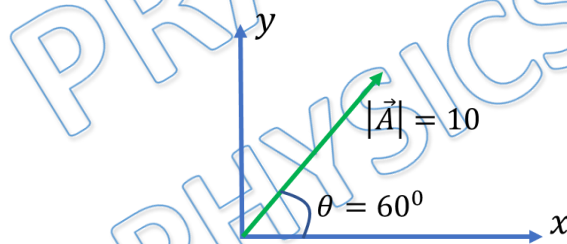
Q 2. Which of the following is negative vector of  $\vec{A} = 2\hat{i} - 3\hat{j} + 4\hat{k}$ :

- (a)  $\vec{B} = 2\hat{i} - 3\hat{j} + 4\hat{k}$
- (b)  $\vec{B} = 2\hat{i} + 3\hat{j} + 4\hat{k}$
- (c)  $\vec{B} = -2\hat{i} - 3\hat{j} - 4\hat{k}$
- (d)  $\vec{B} = -2\hat{i} + 3\hat{j} - 4\hat{k}$

Q 3. Find the magnitude of vector  $\vec{P} = 10\hat{i} + 30\hat{j}$ :

- (a)  $10\sqrt{10}$
- (b)  $10\sqrt{20}$
- (c)  $20\sqrt{10}$
- (d) 45

Q 4. Represent the given vector in  $\hat{i}$  &  $\hat{j}$  notation:



- (a)  $\vec{A} = 5\hat{i} + 5\hat{j}$
- (b)  $\vec{A} = 5\hat{i} - 5\hat{j}$
- (c)  $\vec{A} = 5\hat{i} + 5\sqrt{3}\hat{j}$
- (d)  $\vec{A} = 5\sqrt{3}\hat{i} + 5\hat{j}$

Q 5. Find a unit vector in the direction of  $\vec{P} = \hat{i} + \hat{j}$ :

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

Q 6. Find a vector  $\vec{Q}$  of magnitude 5 unit in the the direction of  $\vec{P} = 6\hat{i} + 8\hat{j}$ :

- (a)  $\vec{Q} = 6\hat{i} + 8\hat{j}$
- (b)  $\vec{Q} = 3\hat{i} + 4\hat{j}$
- (c)  $\vec{Q} = \frac{6}{\sqrt{2}}\hat{i} + \frac{8}{\sqrt{2}}\hat{j}$
- (d)  $\vec{Q} = \frac{3}{\sqrt{2}}\hat{i} + \frac{4}{\sqrt{2}}\hat{j}$



- Q 7. Find a vector of magnitude 3 in the direction opposite to the direction of  $\vec{c} = \frac{1}{2}\hat{i} + \frac{1}{2}\hat{j}$ :
- (a)  $\vec{P} = -\frac{1}{2}\hat{i} - \frac{1}{2}\hat{j}$                       (b)  $\vec{P} = -\frac{3}{2}\hat{i} - \frac{3}{2}\hat{j}$   
(c)  $\vec{P} = -\frac{\sqrt{3}}{2}\hat{i} - \frac{\sqrt{3}}{2}\hat{j}$                       (d)  $\vec{P} = -\frac{3}{\sqrt{2}}\hat{i} - \frac{3}{\sqrt{2}}\hat{j}$
- Q 8. Find the resultant vector  $\vec{R}$ , where  $\vec{R} = \vec{A} + \vec{B}$ , if  $\vec{A} = 2\hat{i} + 3\hat{j}$  and  $\vec{B} = 4\hat{i} - 4\hat{j}$  :
- (a)  $\vec{R} = 6\hat{i} + 7\hat{j}$                       (b)  $\vec{R} = 6\hat{i} - \hat{j}$   
(c)  $\vec{R} = 6\hat{i} - 7\hat{j}$                       (d)  $\vec{P} = \hat{i} - \hat{j}$
- Q 9. Find the resultant vector  $\vec{R} = \vec{A} - \vec{B}$ , if  $\vec{A} = 5\hat{i} - 3\hat{j}$  and  $\vec{B} = 3\hat{i} + 7\hat{j}$  :
- (a)  $\vec{R} = 2\hat{i} - 10\hat{j}$                       (b)  $\vec{R} = 2\hat{i} - 4\hat{j}$   
(c)  $\vec{R} = 8\hat{i} - 7\hat{j}$                       (d)  $\vec{P} = 2\hat{i} + 4\hat{j}$
- Q 10. If  $\vec{A} = 4\hat{i} - 3\hat{j}$  and  $\vec{B} = 6\hat{i} + 8\hat{j}$ , then magnitude and direction of  $\vec{A} + \vec{B}$ :
- (a)  $5, \tan^{-1}\left(\frac{3}{4}\right)$  from  $x$  - axis  
(b)  $5\sqrt{5}, \tan^{-1}\left(\frac{1}{2}\right)$  from  $x$  - axis  
(c)  $10, \tan^{-1}(5)$  from  $x$  - axis  
(d)  $25, \tan^{-1}\left(\frac{3}{4}\right)$  from  $x$  - axis

## Answer Key

<b>Q.1 a</b>	<b>Q.2 d</b>	<b>Q.3 a</b>	<b>Q.4 c</b>	<b>Q.5 b</b>
<b>Q.6 b</b>	<b>Q.7 d</b>	<b>Q.8 b</b>	<b>Q.9 a</b>	<b>Q.10 b</b>


PLUS **ICONIC\*\***

- ✓ India's Best Educators
- ✓ Interactive Live Classes
- ✓ Structured Courses & PDFs
- ✓ Live Tests & Quizzes
- ✗ Personal Coach
- ✗ Study Planner

24 months	₹2,333/mo	>
No cost EMI	₹56,000	
18 months	₹2,625/mo	>
No cost EMI	₹47,250	
12 months	₹3,208/mo	>
No cost EMI	₹38,500	
6 months	₹4,667/mo	>
No cost EMI	₹28,000	

To be paid as a one-time payment

[View all plans](#)

 Add a referral code APPLY

# PHYSICSLIVE


PLUS **ICONIC\*\***

- ✓ India's Best Educators
- ✓ Interactive Live Classes
- ✓ Structured Courses & PDFs
- ✓ Live Tests & Quizzes
- ✗ Personal Coach
- ✗ Study Planner

24 months	₹2,100/mo	>
No cost EMI	+10% OFF ₹50,400	
18 months	₹2,363/mo	>
No cost EMI	+10% OFF ₹42,525	
12 months	₹2,888/mo	>
No cost EMI	+10% OFF ₹34,650	
6 months	₹4,200/mo	>
No cost EMI	+10% OFF ₹25,200	

To be paid as a one-time payment

[View all plans](#)

 Awesome! **PHYSICSLIVE** code applied ✗

Use code **PHYSICSLIVE** to get 10% OFF on Unacademy PLUS.

# Written Solution

**DPP-2 Vectors (Unit Vectors, Resolution of a vector)**

**By Physicsaholics Team**

Solution.1

Unit Vector of  $\vec{A}$  is  $\hat{A}$

$$\hat{A} = \frac{\vec{A}}{|\vec{A}|}$$

$\hat{A}$  has magnitude 1 and is in the direction of  $\vec{A}$ .

Ans.a

Solution.2

$$\vec{A} = 2\hat{i} - 3\hat{j} + 4\hat{k}$$

Negative vector ( $\vec{B}$ ) =  $-\vec{A} = -(2\hat{i} - 3\hat{j} + 4\hat{k})$

$$\vec{B} = -2\hat{i} + 3\hat{j} - 4\hat{k}$$

Ans.d

Solution.3

$$\text{Given, } \vec{p} = 10\hat{i} + 30\hat{j}$$

$$\therefore |\vec{p}| = p = \sqrt{10^2 + (30)^2}$$

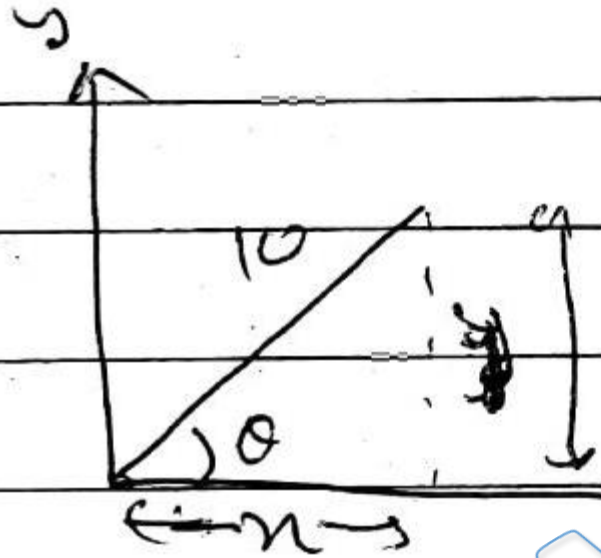
$$p = \sqrt{10^2 + 900}$$

$$p = \sqrt{100 + 900} = \sqrt{1000}$$

$$p = 10\sqrt{10}$$

Ans.a

Solution.4



$$\vec{A} = x\hat{i} + y\hat{j}$$

$$x = 10 \cos 60^\circ = 5$$

$$y = 10 \sin 60^\circ = 5\sqrt{3}$$

$$\vec{A} = x\hat{i} + y\hat{j}$$

$$\vec{A} = 5\hat{i} + 5\sqrt{3}\hat{j}$$

Ans.c



Solution.5

$$\vec{p} = \hat{i} + \hat{j}$$

$$\hat{p} = \frac{\vec{p}}{|\vec{p}|}$$

$$|\vec{p}| = \sqrt{(1)^2 + (1)^2} = \sqrt{2}$$

$$\therefore \hat{p} = \frac{\vec{p}}{\sqrt{2}} = \frac{\hat{i} + \hat{j}}{\sqrt{2}}$$

$$\hat{p} = \frac{\hat{i}}{\sqrt{2}} + \frac{\hat{j}}{\sqrt{2}}$$

Ans.b

Solution.6

$$\vec{P} = 6\hat{j} + 8\hat{j}$$

$$\hat{P} = \frac{\vec{P}}{|\vec{P}|} ; |\vec{P}| = \sqrt{6^2 + 8^2}$$

$$|\vec{P}| = 10$$

$$\hat{P} = \frac{6\hat{j} + 8\hat{j}}{10} = \frac{3}{5}\hat{j} + \frac{4}{5}\hat{j}$$

$$\vec{Q} = |\vec{Q}| \cdot \hat{P} = 5 \cdot \hat{P}$$

$$\vec{Q} = 5 \left( \frac{3}{5}\hat{j} + \frac{4}{5}\hat{j} \right)$$

$$\boxed{\vec{Q} = 3\hat{j} + 4\hat{j}}$$

Ans.b

Solution.7

$$\vec{c} = \frac{1}{2}\hat{i} + \frac{1}{2}\hat{j}$$

direction of  $\vec{c} = \hat{c} = \frac{\rho\vec{c}}{|\vec{c}|}$

$$|\vec{c}| = \sqrt{\left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^2} = \frac{1}{\sqrt{2}} \text{ or } \frac{\sqrt{2}}{2}$$

$$\hat{c} = \frac{\frac{1}{2}\hat{i} + \frac{1}{2}\hat{j}}{\left(\frac{1}{\sqrt{2}}\right)}$$

$$\hat{c} = \frac{1}{\sqrt{2}}\hat{i} + \frac{1}{\sqrt{2}}\hat{j}$$

opposite direction of  $\vec{c} = -\hat{c} = -\frac{1}{\sqrt{2}}\hat{i} - \frac{1}{\sqrt{2}}\hat{j}$

$\therefore$  Vector  $\vec{p} = (3)(-\hat{c})$

$$\vec{p} = 3\left(-\frac{1}{\sqrt{2}}\hat{i} - \frac{1}{\sqrt{2}}\hat{j}\right)$$

$$\vec{p} = -\frac{3}{\sqrt{2}}\hat{i} - \frac{3}{\sqrt{2}}\hat{j}$$

Ans.d

Solution.8

$$\vec{A} = 2\hat{i} + 3\hat{j}$$

$$\vec{B} = 4\hat{i} - 4\hat{j}$$

$$\vec{R} = \vec{A} + \vec{B}$$

$$= (2\hat{i} + 3\hat{j}) + (4\hat{i} - 4\hat{j})$$

$$\boxed{\vec{R} = 6\hat{i} - \hat{j}}$$

$$\boxed{\vec{R} = 6\hat{i} - \hat{j}}$$

Ans.b

Solution.9

$$\vec{R} = \vec{A} - \vec{B}$$

$$\vec{A} = 5\hat{i} - 3\hat{j}$$

$$\vec{B} = 3\hat{i} + 7\hat{j}$$

$$\vec{R} = \vec{A} - \vec{B}$$

$$= (5\hat{i} - 3\hat{j}) - (3\hat{i} + 7\hat{j})$$

$$\boxed{\vec{R} = 2\hat{i} - 10\hat{j}}$$

Ans.a

Solution.10

$$\vec{A} = 4\hat{i} - 3\hat{j}$$

$$\vec{B} = 6\hat{i} + 8\hat{j}$$

$$\vec{A} + \vec{B} = 10\hat{i} + 5\hat{j}$$

$$|\vec{A} + \vec{B}| = \sqrt{(10)^2 + (5)^2} = \sqrt{100 + 25}$$

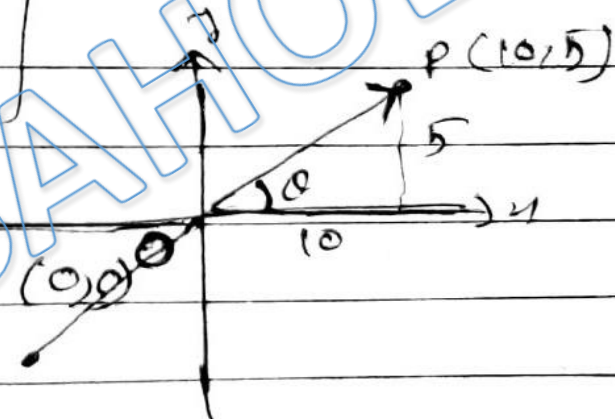
$$|\vec{A} + \vec{B}| = \sqrt{125}$$

$$|\vec{A} + \vec{B}| = 5\sqrt{5}$$

$$\tan \theta = \frac{y}{x}$$

$$\tan \theta = \frac{5}{10} = \frac{1}{2}$$

$$\theta = \tan^{-1}\left(\frac{1}{2}\right) \quad \theta \text{ is from } x\text{-axis.}$$



Ans.b

For Video Solution of this DPP, Click on below link

Video Solution  
on Website:-

<https://physicsaholics.com/home/courseDetails/43>

Video Solution  
on YouTube:-

<https://youtu.be/kmKmoOsWl5k>

Written Solution  
on Website:-

<https://physicsaholics.com/note/notesDetails/84>

 **SUBSCRIBE**



[@Physicsaholics](#)

[@Physicsaholics\\_prateek](#)

[@NEET\\_Physics](#)

[@IITJEE\\_Physics](#)

[physicsaholics.com](#)

[Unacademy](#)



**CLICK**



Chalo Niklo