Physicsaholics

DPP – 2 (Vectors)

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.

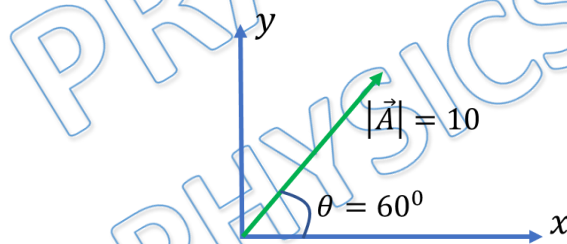Q 2. Which of the following is negative vector of $\vec{A} = 2\hat{i} - 3\hat{j} + 4\hat{k}$:
(a) $\vec{B} = 2\hat{i} - 3\hat{j} + 4\hat{k}$ (b) $\vec{B} = 2\hat{i} + 3\hat{j} + 4\hat{k}$
(c) $\vec{B} = -2\hat{i} - 3\hat{j} - 4\hat{k}$ (d) $\vec{B} = -2\hat{i} + 3\hat{j} - 4\hat{k}$

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

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