

1. $\vec{A} = (x, y-1)$
 $\vec{B} = (2x, y-1)$
 If $|\vec{AB}| = 2 \Rightarrow x = ?$
 A) 0 B) ± 1 C) ± 2 D) ± 3 E) ± 4

2. $\vec{A} = (3m, 2m+1)$
 $\vec{B} = (m, m-1)$
 If $|\vec{A} + \vec{B}| = 5 \Rightarrow m = ?$
 A) 0 B) ± 1 C) ± 2 D) ± 3 E) ± 4

3. $\vec{a} = \left(\frac{3}{2}, \frac{1}{2}\right)$, $\vec{b} = (-6, -2)$ if $\vec{b} = k\vec{a}$ find $k = ?$
 A) 0 B) 2 C) -2 D) 4 E) -4

4. If the vectors $\vec{a} = (-3+p, 7)$ and $\vec{b} = (3, p+1)$ are parallel then the value(s) of p are(is)
 A) 4, -4 B) 4, 6 C) -4, 6 D) -4, -6 E) 1, -1

5. The points $A(3, -5)$ and $B(1, 1)$ are given. Which one is the unit vector in the direction of \vec{AB} ?
 A) $\left(\frac{-1}{\sqrt{10}}, \frac{-1}{\sqrt{10}}\right)$ B) $\left(\frac{3}{\sqrt{10}}, \frac{-3}{\sqrt{10}}\right)$
 C) $\left(\frac{-1}{\sqrt{10}}, \frac{3}{\sqrt{10}}\right)$ D) $\left(\frac{1}{\sqrt{10}}, \frac{-3}{\sqrt{10}}\right)$
 E) $\left(\frac{-3}{\sqrt{10}}, \frac{-3}{\sqrt{10}}\right)$

6. $\vec{a} = (x+y, 2-x)$ and $\vec{b} = (y-2x, 1)$ are given. If $2\vec{a} + \vec{b} = (3, 3)$ then find x and y ?
 A) (1,1) B) (1,-1) C) (2,-1)
 D) (2,-2) E) (-2,-2)

7. Which of the followings can be applied on Vectors Set?
 I- $\forall \vec{a}, \vec{b} \in V$, $\vec{a} + \vec{b} \in V$
 II- $\forall \vec{a}, \vec{b} \in V$, $\vec{a} + \vec{b} = \vec{b} + \vec{a}$
 III- $\forall \vec{a}, \vec{b}, \vec{c} \in V$, $(\vec{a} + \vec{b}) + \vec{c} = \vec{a} + (\vec{b} + \vec{c})$
 IV- $\forall \vec{a}, \vec{b}, \vec{c} \in V$, $\vec{a} \cdot (\vec{b} + \vec{c}) = (\vec{a} \cdot \vec{b}) + (\vec{a} \cdot \vec{c})$
 V- $\forall \vec{a}, \vec{b}, \vec{c} \in V$, $\vec{a} \cdot (\vec{b} \cdot \vec{c}) = (\vec{a} \cdot \vec{b}) \cdot \vec{c}$
 A) I, II, V B) I, II, III, IV C) I and V
 D) IV and V E) None of them

8. If $A = (x, y)$, $B = (3, -1)$ and $\vec{AB} = (-2, 5)$, find (x, y) .
 A) (1,4) B) (5,0) C) (5,-6)
 D) (-1,6) E) (-5,6)

9. The vectors $\vec{A} = (6, 1)$ and $\vec{B} = (3, 5)$ are given. Find the unit vector whose direction is opposite with the direction of the vector \vec{AB} .
 A) $\left(\frac{4}{5}, -\frac{3}{5}\right)$ B) $\left(-\frac{3}{5}, \frac{4}{5}\right)$
 C) $\left(-\frac{3}{5}, -\frac{4}{5}\right)$ D) $\left(-\frac{4}{5}, \frac{3}{5}\right)$
 E) $\left(\frac{3}{5}, -\frac{4}{5}\right)$

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10. The vectors $\vec{A} = (0, -5)$ and $\vec{B} = (4, -3)$ are given.

Find the vector projection of the vector \vec{A} onto the vector \vec{B} .

- A) $(\frac{4}{25}, -\frac{3}{25})$ B) $(\frac{12}{25}, \frac{9}{25})$ C) $(\frac{4}{5}, \frac{3}{5})$
 D) $(\frac{12}{5}, -\frac{9}{5})$ E) $(-\frac{12}{5}, \frac{9}{5})$

11. The vectors $\vec{A} = (k+2)i - 6j$ and

$\vec{B} = -i + (k-3)j$ are given. If the vector \vec{A} is parallel to the vector \vec{B} , find the positive value of k .

- A) 5 B) 4 C) 3 D) 2 E) 1

12. The vectors $\vec{P} = -i + 4j$, $\vec{M} = 3i - 2aj$ and

$\vec{N} = 5i + j$ are given. If the vector \vec{PM} is orthogonal to the vector \vec{PN} , find a .

- A) -6 B) -2 C) 0 D) 2 E) 6

13. The vectors $\vec{A} = (2, 5)$ and $\vec{B} = (3, 4)$ are given. If

$\vec{AC} = \vec{BA}$, find the vector \vec{C} .

- A) (2,3) B) (1,5) C) (1,6) D) (6,1) E) (5,1)

14. In the figure, if $\vec{AB} \cdot \vec{AC} = 4$, find a .

- A) $2\sqrt{2}$ B) $4\sqrt{2}$
 C) $\sqrt{2}$ D) 6
 E) 8

