

1. Add the vectors

$$\mathbf{v} = 4\mathbf{i} - 7\mathbf{j} \text{ and}$$

$$\mathbf{w} = -3\mathbf{i} + 12\mathbf{j}$$

2. Subtract the vector

$$\mathbf{u} = -5\mathbf{i} + 4\mathbf{j} \text{ from}$$

$$\mathbf{z} = \mathbf{i} - 9\mathbf{j}$$

3. The vector \mathbf{v} has initial point P and terminal point Q. Write \mathbf{v} in the form $a\mathbf{i} + b\mathbf{j}$; that is, find its position vector.

$$P = (1,9) \quad Q = (5,6)$$

4. The vector \mathbf{v} has initial point P and terminal point Q. Write \mathbf{v} in the form $a\mathbf{i} + b\mathbf{j}$; that is, find its position vector.

$$P = (4, -3) \quad Q = (0, 5)$$

5. Find the quantity if $\mathbf{v} = 3\mathbf{i} - 5\mathbf{j}$
and $\mathbf{w} = -2\mathbf{i} + 3\mathbf{j}$.

$$2\mathbf{v} + 3\mathbf{w}$$

6. Find the quantity if $\mathbf{v} = 3\mathbf{i} - 5\mathbf{j}$
and $\mathbf{w} = -2\mathbf{i} + 3\mathbf{j}$.

$$\|\mathbf{v} + \mathbf{w}\|$$

7. Write the vector \mathbf{v} in the form $a\mathbf{i} + b\mathbf{j}$, given its magnitude $\|\mathbf{v}\|$ and the angle α it makes with the positive x-axis.

$$\|\mathbf{v}\| = 8, \alpha = 240^\circ$$

8. Write the vector \mathbf{v} in the form $a\mathbf{i} + b\mathbf{j}$, given its magnitude $\|\mathbf{v}\|$ and the angle α it makes with the positive x-axis.

$$\|\mathbf{v}\| = 12, \alpha = 300^\circ$$

9. Find the direction angle of the vector \mathbf{v} .

$$\mathbf{v} = -\mathbf{i} + 3\mathbf{j}$$

10. Find the direction angle of the vector v

$$v = -3i - 6j$$