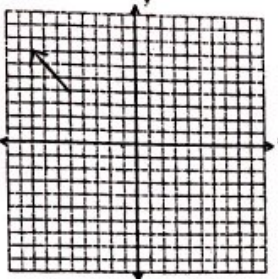


$ai + bj$ Form Practice

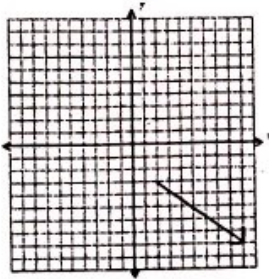
Write each of the following vectors in component form and then in $ai + bj$ form.

1.



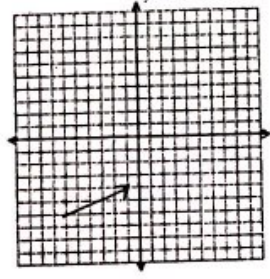
$\langle -3, 3 \rangle$
 $-3i + 3j$

2.



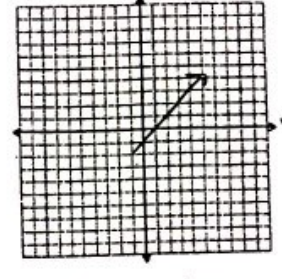
$\langle 7, -5 \rangle$
 $7i - 5j$

3.



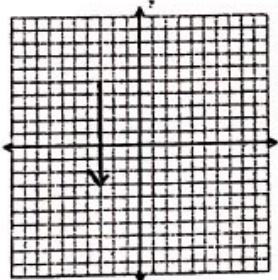
$\langle 5, 2 \rangle$
 $5i + 2j$

4.



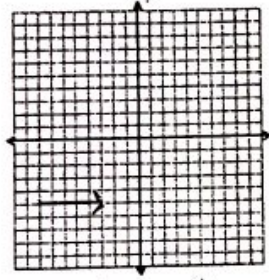
$\langle 6, 6 \rangle$
 $6i + 6j$

5.



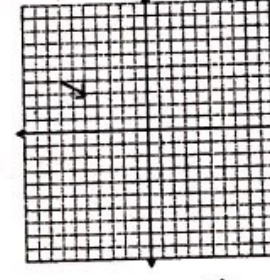
$\langle 0, -8 \rangle$
 $-8j$

6.



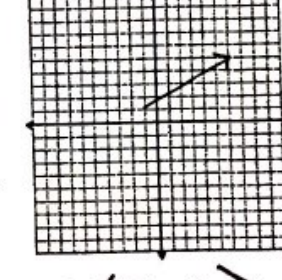
$\langle 5, 0 \rangle$
 $5i$

7.



$\langle 2, -1 \rangle$
 $2i - j$

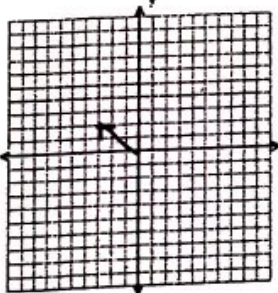
8.



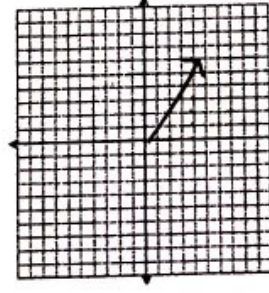
$\langle 7, 4 \rangle$
 $7i + 4j$

Draw each of the following vectors.

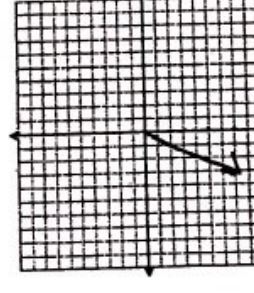
9. $-3i + 2j$



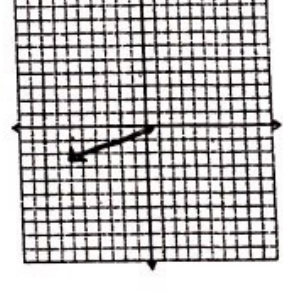
10. $4i + 6j$



11. $7i - 3j$



12. $-6i - 2j$



Dot Product and Angles Between Vectors

For each of the following find the dot product $v \cdot w$ and the angle between v and w . Find the Unit Vector!

1. $v = i - j$ and $w = i + j$

$$v \cdot w = 0$$

$$\theta = 90^\circ$$

$$v = \left\langle \frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2} \right\rangle$$

2. $v = i + j$ and $w = -i + j$

$$v \cdot w = 0$$

$$\theta = 90^\circ$$

3. $v = 2i + j$ and $w = i + 2j$

$$v \cdot w = 4$$

$$\theta = 36.87^\circ$$

$$v = \left\langle \frac{2\sqrt{5}}{5}, \frac{\sqrt{5}}{5} \right\rangle$$

4. $v = 2i + 2j$ and $w = i + 2j$

$$v \cdot w = 6$$

$$\theta \approx 18.435^\circ$$

5. $v = \sqrt{3}i - j$ and $w = i + j$

$$v \cdot w = \sqrt{3} - 1$$

$$\theta = 75^\circ$$

$$v = \left\langle \frac{\sqrt{3}}{2}, -\frac{1}{2} \right\rangle$$

6. $v = i + \sqrt{3}j$ and $w = i - j$

$$v \cdot w = 1 - \sqrt{3}$$

$$\theta = 105^\circ$$

7. $v = 3i + 4j$ and $w = 4i + 3j$

$$v \cdot w = 24$$

$$\theta = 16.260^\circ$$

$$v = \left\langle \frac{3}{5}, \frac{4}{5} \right\rangle$$

8. $v = 3i - 4j$ and $w = 4i - 3j$

$$v \cdot w = 24$$

$$\theta = 16.260^\circ$$

9. $v = 4i$ and $w = j$

$$v \cdot w = 0$$

$$\theta = 90^\circ$$

$$v = \left\langle 1, \frac{1}{4} \right\rangle$$

10. $v = i$ and $w = -3j$

$$v \cdot w = 0$$

$$\theta = 90^\circ$$