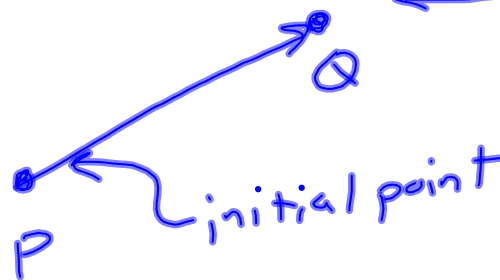


6-3 VECTORS

Vector - a quantity represented by an arrow with both direction and magnitude

\overrightarrow{PQ}



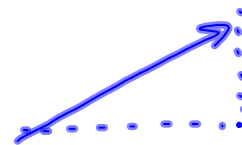
Component form -

$$v = \langle v_1, v_2 \rangle$$

\uparrow change in x \uparrow change in y

$$\|v\| = \text{magnitude}$$

if $\|v\| = 1$, then v is a unit vector



Ex 1 Find the component form and magnitude of v .

initial point: $(5, -3)$

terminal point: $(-1, 6)$

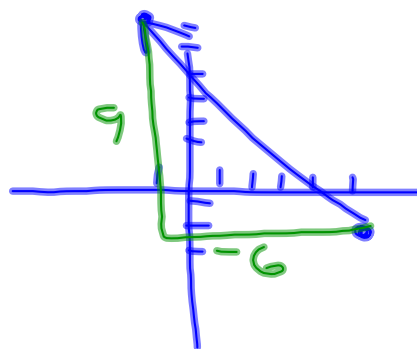
$$\langle -6, 9 \rangle$$

$$\|v\| = \sqrt{36 + 81}$$

$$\sqrt{117}$$

$$\sqrt{9 \cdot 13}$$

$$3\sqrt{13}$$



Ex 2 Find the component form and magnitude of v .

initial point: $(-4, 7)$

terminal point: $(1, 3)$

$$u = \langle u_1, u_2 \rangle$$

$$v = \langle v_1, v_2 \rangle$$

$$u + v = \langle u_1 + v_1, u_2 + v_2 \rangle$$

$$ku = \langle ku_1, ku_2 \rangle$$

Ex 3 $v = \langle -4, 3 \rangle$

$$w = \langle 2, 5 \rangle$$

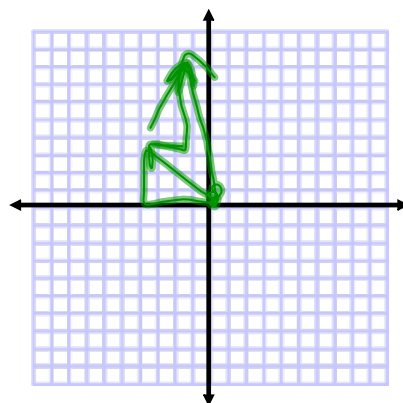
Find each of the following algebraically and graphically:

$$2v \quad \langle -8, 6 \rangle$$

$$v + w \quad \langle -2, 8 \rangle$$

$$v + 2w \quad \langle 0, 13 \rangle$$

$$w - v \quad \langle 6, 2 \rangle$$



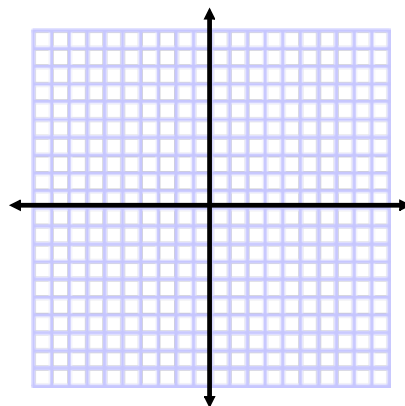
$$\text{Ex 4} \quad v = \langle 6, 1 \rangle$$
$$w = \langle 3, -2 \rangle$$

Find each of the following algebraically and graphically:

$$3w$$

$$v - w$$

$$2v + w$$



Homework
p.433
#1-33 odds

