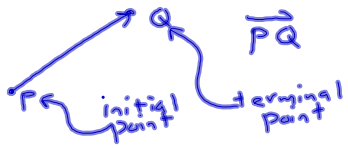
6-3 VECTORS

Vector - a representation of magnitude and direction



$\|\vec{PQ}\|$ = magnitude of $\vec{PQ}$

equivalent = same length and same direction

Standard form = initial point at the origin

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Component form - $v = \langle v_1, v_2 \rangle$

$\|v\| = \sqrt{v_1^2 + v_2^2}$

If $\|v\| = 1$, v is a unit vector

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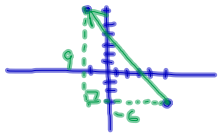
Ex 1 Find the component form and magnitude of ***v***.
initial point: (5, -3)
terminal point: (-1, 6)



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

$\|v\| = \sqrt{(-6)^2 + 9^2}$

$= \sqrt{36+81}$

$= \sqrt{117}$

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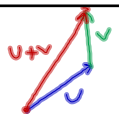
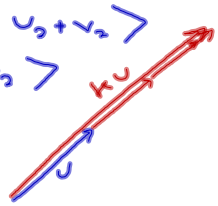
$u = \langle u_1, u_2 \rangle$

$v = \langle v_1, v_2 \rangle$



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

$ku = \langle ku_1, ku_2 \rangle$



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Ex 2 $v = \langle -4, 3 \rangle$

$w = \langle 2, 5 \rangle$

$\langle -4, 10 \rangle$

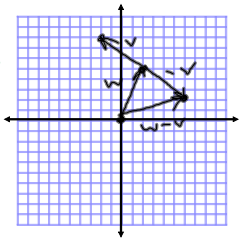
Find each of the following algebraically and graphically:

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

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

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

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



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