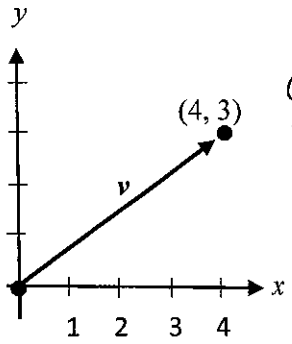
Intro to Vectors WS

Name Key

Component Form of a Vector

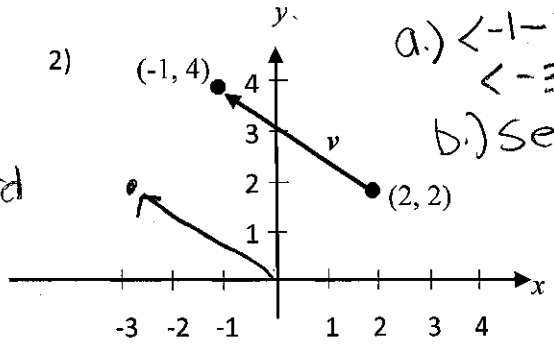
For each of the following ..... (a) find the component form of the vector
(b) sketch the vector is standard position

1)



a.) $\langle 4, 3 \rangle$
b.) already in standard position

2)



a.) $\langle -1-2, 4-2 \rangle$
$\langle -3, 2 \rangle$
b.) See graph

3) initial point: (3, –2)
terminal point: (3, 3)

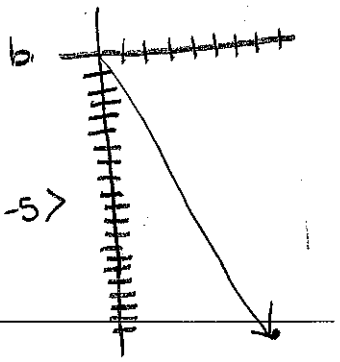
a.) $\langle 3-3, 3--2 \rangle$
$\langle 0, 5 \rangle$

b.)

4) initial point: (5/2, 1)
terminal point: (–2, –3/2)

a.) $\langle -2-\frac{5}{2}, -\frac{3}{2}-1 \rangle$
$\langle -4\frac{1}{2}, -2\frac{1}{2} \rangle$

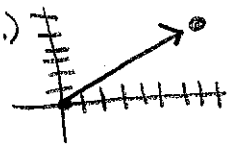
b.)



5) tail: (–3, –5)
head: (5, 1)

a.) $\langle 5--3, 1--5 \rangle$
$\langle 8, 6 \rangle$

b.)



6) tail: (–4.2, 5)
head: (3.7, –12.9)

a.) $\langle 3.7--4.2, -12.9-5 \rangle$
$\langle 7.9, -17.9 \rangle$

Vector Operations

For each of the following, find: (a) $\mathbf{u} + \mathbf{v}$
(b) $\mathbf{u} - \mathbf{v}$
(c) $2\mathbf{u} - 3\mathbf{v}$
(d) $\mathbf{v} + 4\mathbf{u}$

7) $\mathbf{u} = \langle 4, 2 \rangle$ and $\mathbf{v} = \langle 7, 1 \rangle$

a.) $\langle 4+7, 2+1 \rangle = \langle 11, 3 \rangle$
b.) $\langle 4-7, 2-1 \rangle = \langle -3, 1 \rangle$
c.) $\langle 8, 4 \rangle - \langle 21, 3 \rangle = \langle -13, 1 \rangle$
d.) $\langle 7, 1 \rangle + \langle 16, 8 \rangle = \langle 23, 9 \rangle$

8) $\mathbf{u} = \langle -5, -2 \rangle$ and $\mathbf{v} = \langle -4, 0 \rangle$

a.) $\langle -5+-4, -2+0 \rangle = \langle -9, -2 \rangle$
b.) $\langle -5--4, -2-0 \rangle = \langle -1, -2 \rangle$
c.) $\langle -10, -4 \rangle + \langle +12, 0 \rangle = \langle 2, -4 \rangle$
d) $\langle -4, 0 \rangle + \langle -20, -8 \rangle = \langle -24, -8 \rangle$