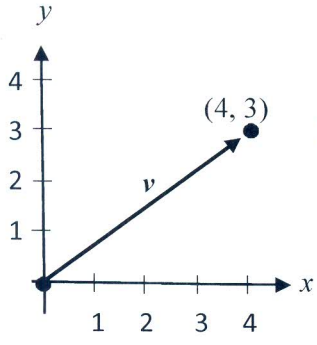
Intro to Vectors WS

Name Fuston

Component Form of a Vector

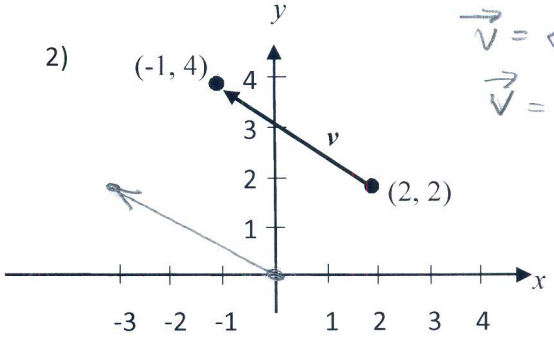
For each of the following ..... (a) find the component form of the vector
(b) sketch the vector is standard position

1)



$\vec{v} = \langle 4, 3 \rangle$ already in standard form

2)



$\vec{v} = \langle -1-2, 4-2 \rangle$

$\vec{v} = \langle -3, 2 \rangle$

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

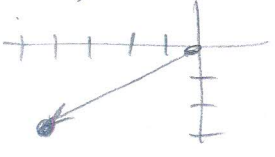
$\vec{v} = \langle 3-3, 3-^{-}2 \rangle$

$= \langle 0, 5 \rangle$

4) initial point: (5/2, 1) $= \left(\frac{5}{2}, \frac{2}{2}\right)$
terminal point: (–2, –3/2) $= \left(-\frac{4}{2}, -\frac{3}{2}\right)$

$\vec{v} = \left\langle -\frac{4}{2} - \frac{5}{2}, -\frac{3}{2} - \frac{2}{2} \right\rangle$

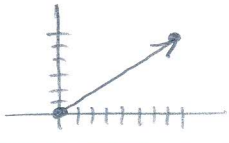
$= \left\langle \frac{-9}{2}, \frac{-5}{2} \right\rangle$



5) tail: (–3, –5)
head: (5, 1)

$\vec{v} = \langle 5-^{-}3, 1-^{-}5 \rangle$

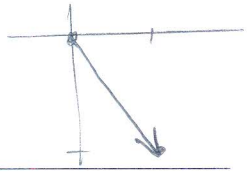
$\langle 8, 6 \rangle$



6) tail: (–4.2, 5)
head: (3.7, –12.9)

$\vec{v} = \langle 3.7-^{-}4.2, -12.9-5 \rangle$

$= \langle 7.9, -17.9 \rangle$



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) $\langle 4, 2 \rangle + \langle 7, 1 \rangle = \langle 11, 3 \rangle$

(b) $\langle 4, 2 \rangle - \langle 7, 1 \rangle = \langle -3, 1 \rangle$

(c) $2\langle 4, 2 \rangle - 3\langle 7, 1 \rangle$

$\langle 8, 4 \rangle - \langle 21, 3 \rangle = \langle -13, 1 \rangle$

(d) $\langle 7, 1 \rangle + 4\langle 4, 2 \rangle$

$\langle 7, 1 \rangle + \langle 16, 8 \rangle = \langle 23, 9 \rangle$

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

(a) $\langle -5, -2 \rangle + \langle -4, 0 \rangle = \langle -9, -2 \rangle$

(b) $\langle -5, -2 \rangle - \langle -4, 0 \rangle = \langle -1, -2 \rangle$

(c) $2\langle -5, -2 \rangle - 3\langle -4, 0 \rangle$

$\langle -10, -4 \rangle - \langle -12, 0 \rangle = \langle 2, -4 \rangle$

(d) $\langle -4, 0 \rangle + 4\langle -5, -2 \rangle$

$\langle -4, 0 \rangle + \langle -20, -8 \rangle = \langle -24, -8 \rangle$