Vectors   Notes   Name_____
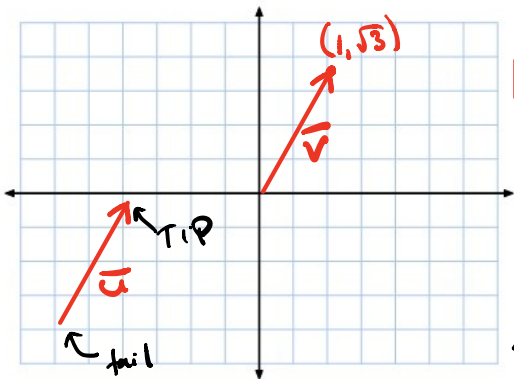
V1 - Terminology

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

Vector Components

magnitude = length

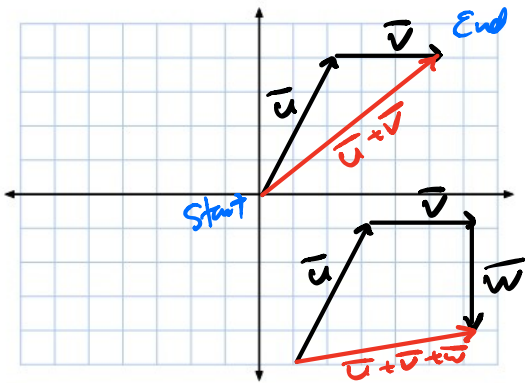$\|\vec{v}\| =$ magnitude

$\vec{v} = \langle 1, \sqrt{3} \rangle$

$\|\vec{v}\| = 2$

Vector Polar Form

$\vec{v} = (\|\vec{v}\|, \Theta)$

$\vec{v} = (2, 60°)$

Vector Addition Graphically "Tip to Tail" method

$\vec{u} + \vec{v} = \langle 5, 4 \rangle$
$\vec{u} + \vec{v} + \vec{w} = \langle 5, 1 \rangle$

Vector Addition Algebraically

$\vec{u} = \langle 2, 4 \rangle$
$\vec{v} = \langle 3, 0 \rangle$
$\vec{w} = \langle 0, 3 \rangle$

$\vec{u} + \vec{v} = \langle 2+3, 4+0 \rangle$
$\qquad = \langle 5, 4 \rangle$

Vector Scalar Multiplication Graphically

$2\vec{u}$
$2\vec{v}$ →
$\frac{1}{2}\vec{v}$ →
$-2\vec{v}$ ←
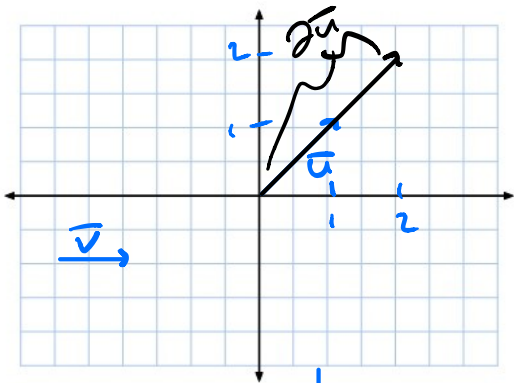
Vector Scalar Multiplication Algebraically

$\vec{u} = \langle 1, 1 \rangle$
$2\vec{u} = \langle 2\cdot 1, 2\cdot 1 \rangle = \langle 2, 2 \rangle$
$\vec{v} = \langle 2, 0 \rangle$
$-2\vec{v} = \langle -4, 0 \rangle$

$4\vec{u} - 3\vec{v} = 4\langle 1, 1 \rangle - 3\langle 2, 0 \rangle$
$4\vec{u} + (-3\vec{v}) = \langle 4, 4 \rangle + \langle -6, 0 \rangle$
$\qquad = \langle -2, 4 \rangle$