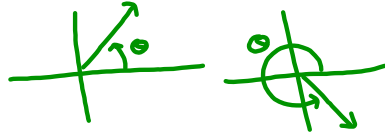
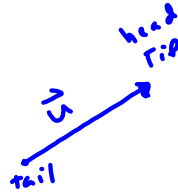


8.1/8.2 - Vectors

Vector - Quantity that has both Magnitude and Direction.

Magnitude - Length of line segment

Direction - Directed angle between positive x-axis and the vector.



θ - Theta

Represent Vector

$$\vec{u} \quad \overrightarrow{AB}$$

Represent Magnitude

$$|\vec{u}| \quad |\overrightarrow{PQ}|$$

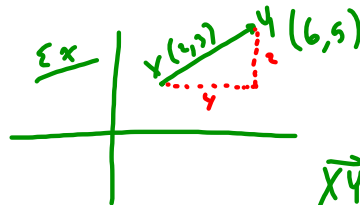
Zero vectors - Magnitude = 0; Any direction

Equal vectors - Same magnitude and direction.

Resultant vectors - Result of adding two vectors.

Opposite vectors - Opposite direction (same magnitude).

Subtraction of vectors $\vec{p} - \vec{q}$ $\vec{p} + (-\vec{q})$



$$\vec{XY} = \langle 6-2, 5-3 \rangle$$

$$\langle 4, 2 \rangle$$

Resultant of a horizontal vector w/ mag. 4

Magnitude of a Vector



$$|\overrightarrow{PP_2}| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$|\vec{u}|$$

$$|\vec{u}| = \sqrt{(6-2)^2 + (5-3)^2}$$

$$= \sqrt{16+4} = \sqrt{20} = \frac{\sqrt{20}}{\sqrt{5 \cdot 4}} = 2\sqrt{5} \text{ units}$$

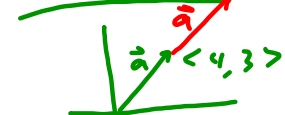
Add vectors



$$\langle 1+4, 4+3 \rangle$$

$$\langle 5, 7 \rangle$$

Scalar Mult.



$$3\langle 4, 3 \rangle$$

$$\langle 12, 9 \rangle$$