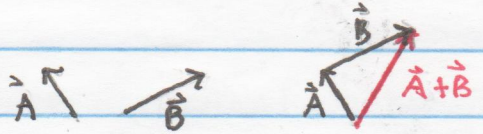
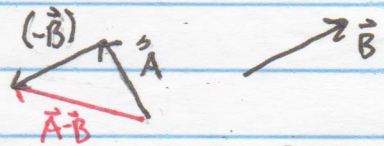
Vector Examples

Ex) Graphically add $\vec{A} + \vec{B}$.

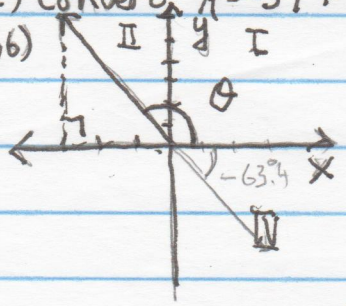


Ex) Graphically subtract $\vec{A} - \vec{B}$

$\vec{A} - \vec{B} = \vec{A} + (-\vec{B})$



Ex) Convert $\vec{A} = -3\hat{i} + 6\hat{j}$ into polar notation (R, θ)



$$R = |\vec{A}| = \sqrt{(-3)^2 + 6^2} = \sqrt{45} = 3\sqrt{5} = 6.71 \text{ m}$$

$$\theta = \tan^{-1}\left(\frac{A_y}{A_x}\right) + 180^\circ$$

$$= \tan^{-1}\left(\frac{6}{-3}\right) + 180$$

$$= -63.43^\circ + 180^\circ = 116.57^\circ$$

So $(R, \theta) = (6.71, 116.57^\circ)$

* Add 180° for Quadrants II & III

QUADRANTS