

$$5. \quad P = \begin{matrix} \text{1st} \\ (-5, 4) \\ x_1 \quad y_1 \end{matrix} \quad Q = \begin{matrix} \text{2nd} \\ (3, 2) \\ x_2 \quad y_2 \end{matrix}$$

$$\begin{aligned} V &= \langle x_2 - x_1, y_2 - y_1 \rangle \\ &= \langle 3 - (-5), 2 - 4 \rangle \\ &= \langle 3 + 5, -2 \rangle \\ &= \langle 8, -2 \rangle \end{aligned}$$

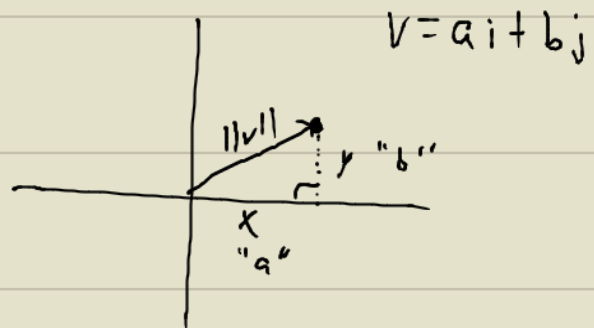
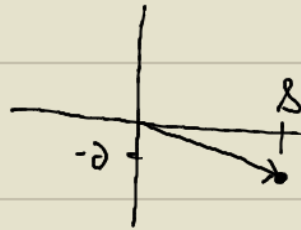
UNIT VECTORS



$\|v\|$ "MAGNITUDE"
AKA DISTANCE

$$\|v\| = \sqrt{a^2 + b^2}$$

$$\begin{aligned} &\langle 8, 0 \rangle + \langle 0, -2 \rangle \\ &8 \langle 1, 0 \rangle + (-2) \langle 0, 1 \rangle \\ &\boxed{8\vec{i} - 2\vec{j}} \end{aligned}$$



$$6. \quad V = -2\vec{i} + 4\vec{j}$$

$$\begin{aligned} \|v\| &= \sqrt{(-2)^2 + (4)^2} \\ &= \sqrt{4 + 16} \\ &= \sqrt{20} \\ &= \sqrt{2 \cdot 2 \cdot 5} \\ &= \boxed{2\sqrt{5}} \end{aligned}$$

$$\begin{aligned} \|v\|^2 &= a^2 + b^2 \\ \|v\| &= \sqrt{a^2 + b^2} \end{aligned}$$

$$7. \quad V = 4\vec{i} + 6\vec{j}$$

$$\begin{aligned} \|v\| &= \sqrt{4^2 + 6^2} \\ &= \sqrt{16 + 36} \\ &= \sqrt{52} \\ &= \sqrt{2 \cdot 2 \cdot 13} \\ &= \boxed{2\sqrt{13}} \end{aligned}$$