Ex : Consider an object with $\vec{v}_o$ = -2.0$\hat{i}$ + 4.0$\hat{j}$ m/s at $t = 0$. It then undergoes an acceleration $a = 3.0$ m/s^2 at $\theta = 130.0°$.

What is $\vec{v}$ at $t = 2.0$ s?

∘ To begin, consider what information is given to us.

∘ Now determine the acceleration vector from the given information.

∘ The **key** to this problem is to consider each dimension separately.

$$\begin{aligned} v_x &= v_{ox} + a_x t \\ &= -2.0\ m/s + (-3.0\ m/s^2 \cos 50.0°)2.0s \\ v_x &= -5.9\ m/s \end{aligned}$$

$$\begin{aligned} v_y &= v_{oy} + a_y t \\ &= 4.0\ m/s + (3.0\ m/s^2 \sin 50.0°)2.0s \\ v_y &= 8.6\ m/s \end{aligned}$$