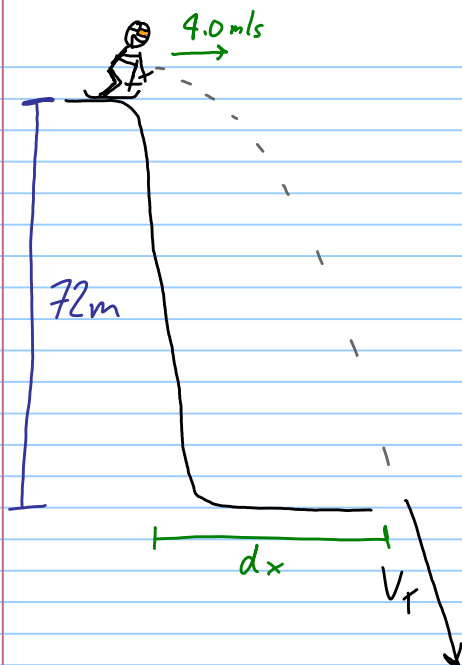


A skier skis horizontally off of a 72 m high cliff at 4.0 m/s. Find

- a. The amount of time it takes to reach the ground.
- b. How far away from the base of the cliff he lands.
- c. His total impact ***speed***.



$$V_x = 4.0 \text{ m/s}$$

$$d_x =$$

$$t = 3.833 \text{ s}$$

$$b.) \quad V_x = \frac{d_x}{t}$$

$$d_x = V_x t$$

$$= (4.0)(3.833)$$

$$= 15 \text{ m} \quad \checkmark$$

$$V_y =$$

$$V_{y0} = 0$$

$$a_y = -9.8 \text{ m/s}^2$$

$$d_y = -72 \text{ m}$$

$$t =$$

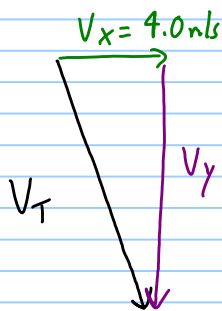
$$a.) \quad d = V_{y0} t + \frac{1}{2} a t^2$$

$$d = \frac{1}{2} a t^2$$

$$t = \sqrt{\frac{2d}{a}} = \sqrt{\frac{2(-72)}{-9.8}}$$

$$= 3.833 \text{ s}$$

$$= 3.8 \text{ s} \quad \checkmark$$



$$V_y = V_{y0} + a t$$

$$V_y = -37.57 \text{ m/s}$$

$$= 0 + -9.8(3.833)$$

$$= -37.57 \text{ m/s} \quad \checkmark$$

$$V_T^2 = V_x^2 + V_y^2 \quad \checkmark$$

$$V_T = \sqrt{V_x^2 + V_y^2} = \sqrt{4.0^2 + (-37.57)^2} = 38 \text{ m/s} \quad \checkmark$$

True or False

1) As the skier falls, the angle that his velocity makes below the horizontal is always increasing.

2) If the skier were to fall from a high enough cliff, he would eventually be falling straight downwards.