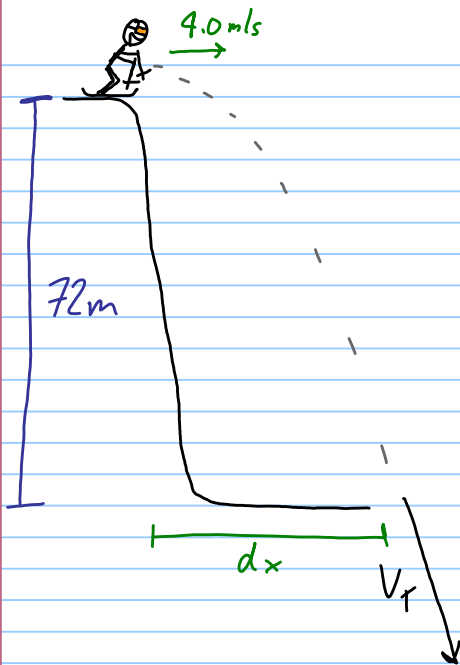A skier skis horizontally off of a 72 m high cliff at 4.0 m/s. Find

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*.

$$V_x = 4.0 \, m/s$$

x	y
$V_x = 4.0 \, m/s$	$V_y =$
$d_x =$	$V_{yo} = 0$
$t = 3.833 \, s$	$a_y = -9.8 \, m/s^2$
	$d_y = -72 \, m$
	$t =$

b.) $V_x = \dfrac{d_x}{t}$

$d_x = V_x t$

$ = (4.0)(3.833)$

$ = \boxed{15 \, m} \checkmark$

a.) $d = V_0 \cancel{t}^{\,0} + \frac{1}{2} a t^2$

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

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

$ = 3.833 \, s$

$ = \boxed{3.8 \, s} \checkmark$

$V_x = 4.0 \, m/s$

V_T
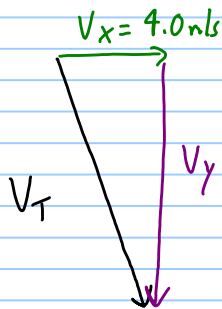
$V_y = -37.57 \, m/s$

$V_y = V_{yo} + at$

$ = 0 + -9.8(3.833)$

$ = -37.57 \, m/s \checkmark$

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

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

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.