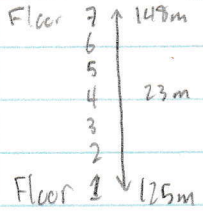
Iteration 0 Calculations



$148m - 123m = 23m$

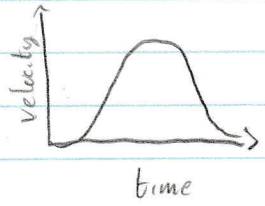
$\frac{\Delta d}{t} = \frac{23m}{8s} = 2.88 m/s$ speed of elevator

Acceleration: elevation $h = ax^2 + bx + c$

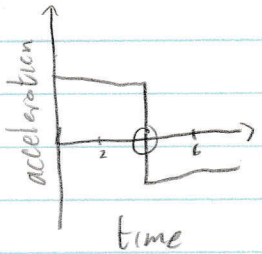
$h(0) = ax^2 + bx + c$

$125 = c$

$h(8) = ax^2 + bx + 125$



∴ assuming that the elevator reaches 0 acceleration by the halfway mark, that's where we find the highest velocity.



$\frac{23}{2} + 125 = h(4)$

$136.5m = h(4)$

$h(4) = ax^2 + bx + 125$

$136.5 = b(4) + 125$

$\frac{11.5}{4} = \frac{4b}{4}$

$b = 2.9 m/s$

$h(8) = ax^2 + 2.9x + 125$

$148m = a(8)^2 + 2.9(0) + 125$ ← end floor 0 velocity

$148m = 64a + 125$

$\frac{23m}{64} = \frac{64a}{64}$

$a = 0.36 m/s^2$

Elevator Doors Opening & Closing:

Assuming each given original test data, provided by Professor Franks, we assume that it takes 1.5s seconds for the passengers to enter / exit the elevator.