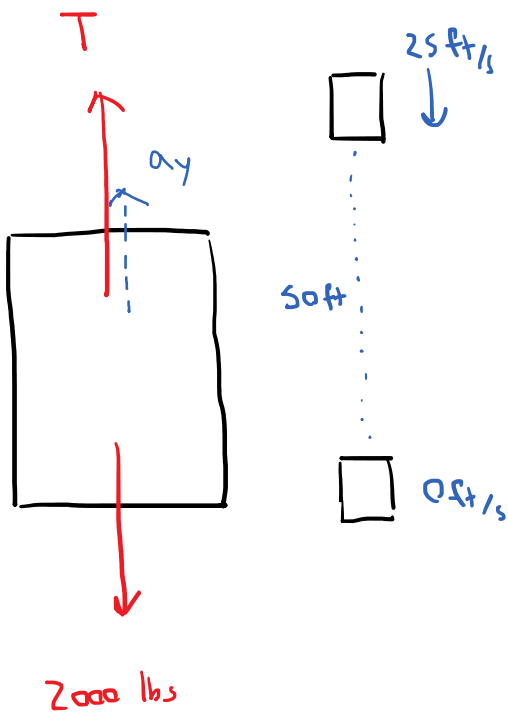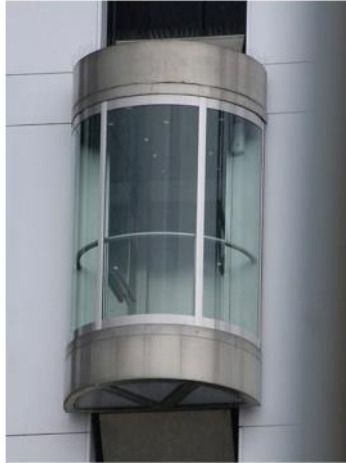# Problem 3

An 2000 lb elevator decelerates a from a speed of 25 ft/s downward to a stop in a distance of 50 ft.

- What is the average rate of deceleration?
- What is the tension in the cable supporting the elevator during this period?

$$V^2 = V_e^2 + 2a\Delta s$$

$$0 = (-25)^2 + 2(a)(-50)$$

$$\boxed{a = 6.25 \text{ ft/s}^2}$$

$$\Sigma F_y = m a_y$$

$$T - 2000 = \frac{2000}{32.2}(6.25)$$

$$\boxed{T = 2388.2 \text{ lbs}}$$

25 ft/s

50 ft

0 ft/s

T

a_y

2000 lbs