

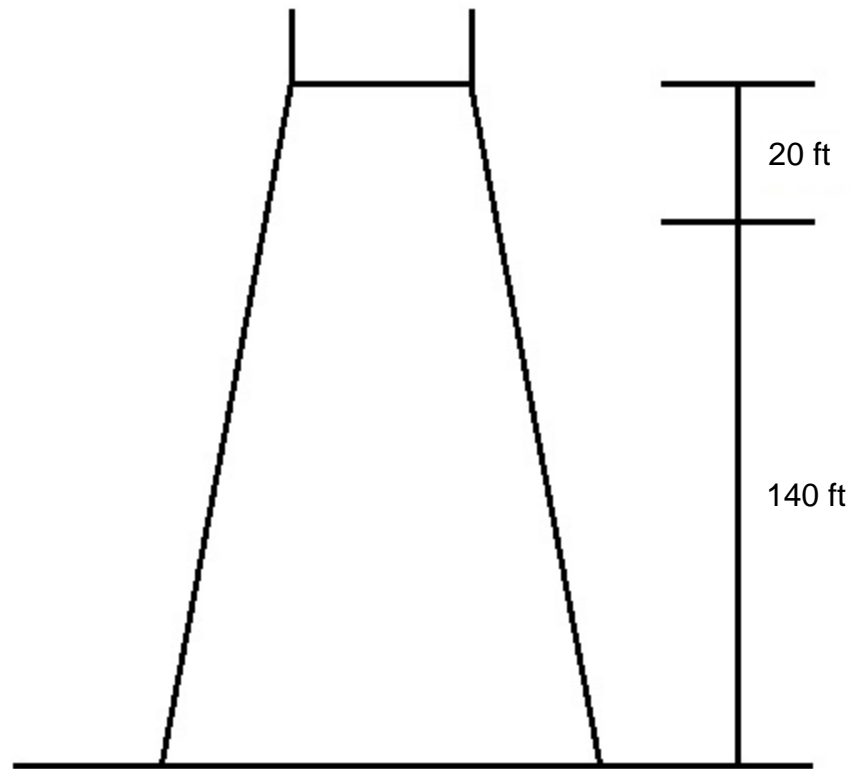
CVG4150

Tutorial 1

Q1.



At time $t = 0$, two persons entered the elevator of the tower shown in the figure below. The first person rode to the restaurant level. The second person went to the observation deck. Plot the time-elevation and the velocity-elevation diagrams for each of the two persons considering that the elevator started up 3s after they entered, made no intermediate stops between the ground and the restaurant levels, and stayed for 6s at the restaurant level. The elevator manufacturer's brochure provides the following technological specifications: acceleration is 5 ft/s^2 , deceleration is 4 ft/s^2 , and the maximum cruising velocity is 20 ft/s .



Q2.



A car collided with a telephone pole and left 20 ft skid marks on the dry pavement. Based on the damages sustained, an engineer estimated that the speed at collision was 15 mi/h. If the roadway had a +3% grade, calculate the speed of the car at the onset of skidding.



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Q3.



Plot the relationship between the approach speed v and the length of the dilemma zone for the following data: $a_2 = 0.5g$, $\delta_2 = 1.0$ s, $w = 65$ ft, $L = 15$ ft, and $\tau = 4.5$ s. To help you interpret this plot, draw another diagram in which the v versus x_c and v versus x_o are superimposed.

