

Problem 28

A mass of 0.25 kg is dropped from rest in a medium offering a resistance of $0.2|v|$, where v is measured in m/s.

- (a) If the mass is dropped from a height of 30 m, find its velocity when it hits the ground.
- (b) If the mass is to attain a velocity of no more than 10 m/s, find the maximum height from which it can be dropped.
- (c) Suppose that the resistive force is $k|v|$, where v is measured in m/s and k is a constant. If the mass is dropped from a height of 30 m and must hit the ground with a velocity of no more than 10 m/s, determine the coefficient of resistance k that is required.