1. (3 points) A ladder 12 feet long rests against a vertical wall. If the bottom of the ladder slides away from the wall at a rate of 0.5 feet per second, how quickly in radians per second is the angle between the ladder and the wall increasing when the bottom of the ladder is 5 feet from the wall?
2. (4 points) A rock is thrown vertically upward from the surface of a planet. The rock’s height above the planet’s surface is given by the equation \( s = t(24 - 1.2t) \), where \( t \) is measured in seconds and \( s \) is measured in meters.

(a) Find a formula for the rock’s velocity at time \( t \).

(b) What is the maximum height reached by the rock?

3. (3 points) Determine a formula for \( P \) as a function of \( t \) given that \( 8P' + 2P = 0 \) and \( P(0) = 5 \). Hint: You may recognize the solution more quickly if you first solve the given equation for \( P' \).