Sample Related Rates Problems

1. A spherical balloon is inflated with helium at the rate of 200 cubic feet per minute. How fast is the balloon’s radius increasing at the instant the radius is 5 feet?

2. Sand falls from a conveyor belt at the rate of 10 cubic feet per minute onto a conical pile. The radius of the base of the pile is always equal to one half the pile’s height. How fast is the height growing when the pile is 5 feet high?

3. A ladder 12 feet long rests against a vertical wall. If the bottom of the ladder is pulled away from the wall at a rate of 2 feet per minute, then how fast is the top of the ladder sliding down the wall when the bottom of the ladder is 4 feet from the wall?