Lesson 7.1

1. A spherical balloon is inflated so that the volume is increasing by 8 in^3/s. How fast is the radius of the balloon changing when the volume is 512 in^3?

2. A boat is pulled toward a dock by a rope attached to a pulley on the dock. The dock is 12 feet above the point on the bow of the boat at which the rope is attached. If the rope is pulled through the pulley at a rate of 10 ft/min, how fast is the boat approaching the dock when 50 feet of rope remain?

3. A man 6 ft tall is walking at a rate of 2 ft/s toward a stationary spotlight 20 ft high. How fast is his shadow length changing? How fast is the tip of his shadow moving?