DERIVATIVE APPS

TEXT: 1.9

LAST NAME	FIRST NAME	DATE

1. Air is being pumped into a spherical balloon so that its volume increases at a rate of 100 cm^3/s. How fast is the radius of the balloon is increasing when the diameter is 50 cm?

2. A ladder 10 feet long rests against a vertical wall. If the bottom of the ladder slides away from the wall at a rate of 1 ft/s, how fast is the top of the ladder sliding down the wall when the bottom of the ladder is 6 feet away from the wall?

3. A water tank has the shape of an inverted circular cone with base radius 2 m and height 4 m. If the water is being pumped into the tank at the rate of 2 m^3/min, find the rate at which the water level is rising when the water is 3 m deep.

4 (6 points)**.** A streetlight is mounted on top of a 15 foot pole. A 6 foot tall person walks away from the light at 5 feet per second along a straight path. How fast is the tip of his shadow moving when he is 40 feet away from the pole?

5 (6 points)**.** A plane flying with a constant speed of 300 km/h passes over a ground radar station at an altitude of 1 km and climbs at an angle of 30°. At what rate is the distance from the plane to the radar station increasing 1 minute later?