Name:
Sec. 3.9 - Related Rates
Math 251
Find the derivatives of the following functions

1. **Filling a tank**
   Water pours into a conical tank of height 10m and radius 4m at a rate of $6m^3/min$.

   (a) At what rate is water rising when the level is 5 high?

   (b) As time passes, what happens to the rate at which the water level rises?

2. **Tracking a rocket**
   A rocket is launched vertically from a lunch pad 6 km away. A spy tracks it using a telescope and notices that at a certain momemt, the angle θ between the telescope and the ground is $\frac{\pi}{3}$ and is changing at a rate of 0.9 radians/min. What is the velocity of the rocket?