

Name: _____

Math 105

Quiz #7

November 11, 2013

- This is a closed-book quiz. No books, notes, calculators, cell phones, communication devices of any sort, or webpages, or other aids are permitted.
- Please *show* all of your work and *justify* all of your answers.

1. [10 Points] A conical tank, 10 feet across the entire top and 9 feet deep, is leaking water. The radius of the water level is decreasing at the rate of 2 feet per minute. How fast is the water leaking out of the tank when the radius of the water level is 1 foot?

**Recall the volume of the cone is given by $V = \frac{1}{3}\pi r^2 h$.

2. [10 Points] A boy is lying on the ground with a remote control airplane. At time $t = 0$ seconds, the toy airplane starts 10 feet above the boy on the ground. It is flying horizontally at a rate of 5 feet per second. At what rate is the distance between the airplane and the boy on the ground increasing when 4 seconds has passed?