

Name \_\_\_\_\_

Homework 28  
section 4.6

1. (3) Two cars start moving from the same point. One travels north at 60 mph and the other travels west at 25 mph. At what rate is the distance between the cars increasing two hours later?

2. (6) A coffee filter in the shape of a right circular cone with a base radius of 6 cm and depth 10 cm contains water, which drips out through a hole at the bottom at a constant rate of  $2 \text{ cm}^3$  per second. How fast is the water level falling when the depth is 8 cm?

3. (5) A particle is moving along the curve  $y = \sqrt{x}$ . As the particle passes through the point  $(4, 2)$ , its  $x$ -coordinate is increasing at a rate of 3 centimeters per second. How fast is the distance from the particle to the origin changing at that moment?

4. (6) A 12 foot long ladder rests against a vertical wall. If the bottom of the ladder slides away from the wall at a speed of 2 feet per second, how fast is the angle between the top of the ladder and the wall changing when the angle with the wall is  $45^\circ$ ?