## **Related Rates Morning Review WS #3**

 Two cyclists leave from the same position. Cyclist A travels due North at 10 mph. One hour later, the cyclist B leaves from the position and travels due East at 20 mph. At what rate is the distance between the two cyclists changing 2 hours after cyclist B leaves?

2) Water is being pumped into a conical tank that is 8 feet tall and has a diameter of 10 feet. If the water is being pumped in at a constant rate of 3/5 cubic feet per hour, at what rate is the depth of the water in the tank changing when the tank is half full?  $\left(V = \frac{\pi}{3}r^2h\right)$ 

3) The radius of a circle is increasing at a constant rate of 0.2 meters per second. What is the rate of increase in the area of the circle at the instant when the circumference of the circle is  $20\pi$  meters?

 $(A = \pi r^2 \quad C = 2\pi r)$ 

4) A cylindrical tank has a height of 16 feet with the area of the circular base being  $25\pi$  ft<sup>2</sup>.

Water flows at 8 cubic feet per minute into the tank. How fast is the water level rising when the tank is half full? (*Area of circle* =  $\pi r^2$ ) (*Volume of cylinder* =  $\pi r^2 h$ )