MAT 161 Problem Session #12 Name _____

1. An extension ladder is leaning against a building. The bottom is sliding away from the base of the building at 3m/min. When the bottom of the ladder is 5m. from the wall, the top is 12 m. above the ground. At what rate is the ladder sliding down the wall?

2. A conical tank has a height of 12m and a diameter at the top of 6m. Water is flowing into the tank at the rate of 2000 liters/hr. (2 m^3/hr.). How fast is the height of water in the tank rising when the radius of the top of the water is 2m?

3. A spherical snowball melts in such a way that its surface area is decreasing at the rate of 6 cm^2./min. Find the rate of change of its volume when the volume is 288π cm^3.

4. At a certain moment, one bicyclist is 4 miles east of an intersection traveling toward the intersection at the rate of 9 miles per hour. At the same time, a second bicyclist is 3 miles south of the intersection traveling away from the intersection at a rate of 10 miles per hour. Is the distance between the bicycles increasing or decreasing at that moment? At what rate?