Midterm Review Extra Word Problems

Solve each related rate problem.

1) Oil spilling from a ruptured tanker spreads in a circle on the surface of the ocean. The radius of the spill increases at a rate of 5 m/min. How fast is the area of the spill increasing when the radius is 6 m?

2) A spherical balloon is inflated so that its radius increases at a rate of 2 cm/sec. How fast is the volume of the balloon increasing when the radius is 9 cm?

Solve each optimization problem.

3) A supermarket employee wants to construct an open-top box from a 16 by 30 in piece of cardboard. To do this, the employee plans to cut out squares of equal size from the four corners so the four sides can be bent upwards. What size should the squares be in order to create a box with the largest possible volume?