Practice worksheet | Rates of change and differential equations

Related-rate problems

Name: _____ Date: _____

6 questions | 12 marks

1. The side of a square grows at 2 cm/s. Find its area rate when the side is 7 cm. [2 marks]

2. A cube edge grows at 0.4 cm/s. Find its volume rate at edge 3 cm. [2 marks]

3. A circle area shrinks at 12π cm^2/s. Find $\frac{dr}{dt}$ at $r = 3$ cm. [2 marks]

4. A 13 m ladder has foot distance 5 m and foot rate 0.6 m/s away from the wall. Find the top rate. [2 marks]

5. Water enters a cylinder of radius 2 m at 3 m^3/min. Find the depth rate. [2 marks]

6. A spherical balloon radius is 6 cm when its volume grows at 72π cm^3/s. Find its radius rate. [2 marks]