

Worksheet 9

Math 251, Summer 2017

Name: _____

I have given you the answers to some of the problems on the bottom of the last page. You need to figure out how to come up with those answers.

1. If the volume V of a cube with edge length x expands as time passes, find a formula for $\frac{dV}{dt}$ in terms of $\frac{dx}{dt}$.
2. A cylindrical tank with radius 5 m is being filled with water at a rate of $3\text{m}^3/\text{min}$. How fast is the height of the water increasing?

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3. The top of a ladder slides down a vertical wall at a rate of 0.15 m/s . At the moment when the bottom of the ladder is 3 m from the wall, it slides away from the wall at a rate of 0.2 m/s . How long is the ladder?

4. A boat is pulled to a dock by a rope attached to the bow of the boat, and the rope connects to the dock 1 meter above the bow of the boat. The rope is being pulled in at 1 m/s . How fast is the boat approaching the dock when it is 8 m from the dock?

Answers: 2) 0.038 m/sec . 3) 5 feet . 4) -1.00778 m/sec .