Section 11.4– Related Rates

Math 1100–4

Examples

1. The radius of a circle is increasing at a rate of 3 ft/sec. At what rate is the area changing when the radius is 4 feet?

2. Suppose that the monthly revenue and cost (in dollars) for x units of a product are $R = 400x - \frac{x^2}{20}$ and C = 5000 + 70x. At what rate per month is the profit changing if the number of units produced and sold is 100 and is increasing at a rate of 10 units per month?

3. A 10 foot ladder is leaning against a wall. If the ladder is sliding down the wall at a rate of 2 ft/sec, at what rate is the base of the ladder sliding along the ground away from the wall when the top of the ladder is 8 feet from the ground?

4. The volume of a spherical balloon is changing at a rate of 3 cubic inches per second. At what rate is the radius changing when the radius is 4 inches?