

Related Rates

1. Say water is dripping into a circular pool with the radius growing at a rate of 0.1 in/min. How fast is the area changing when the radius is 16 inches?

2. Two cars start leaving from the same point. one is traveling south at 60 mi/hr and the other travels west at 45 mi/hr. At what rate is the distance between the cars increasing two hours later?

Hint: Draw a picture! There will be triangles involved - label the sides, etc.

3. A kite 100 ft above the ground moves horizontally at a speed of 8 ft/sec. At what rate is the angle between the string and the horizontal decreasing when 200 ft of string has been let out?

4. A trough is 10 ft long and its ends have the shape of isosceles triangles that are 3 ft across the top and have a height of 1 ft. If the trough is filled with water at a rate of $12 \text{ ft}^3/\text{min}$, how fast is the water level rising when the water is 6 inches deep?