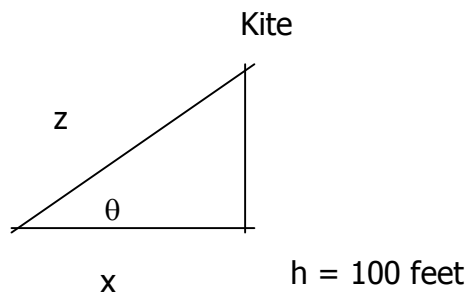


MA 181 SECTION 4.1: RELATED RATES

Note: Volume formulas – front of text.

1. A stone dropped into a still pond sends out a circular ripple whose radius increases at a constant rate of 3 feet per second. How fast is the area of the ripple increasing when the radius is 6 feet?

2. A kite 100 ft above the ground moves horizontally at a speed of 8 ft/s. what rate is the angle between the string and the horizontal decreasing when 200 ft of string have been released?



Extra question: At what rate is the string releasing when 200 feet of string have been let out?

3. Mr. Wilson is standing near the top of a ladder 24 feet long which is leaning against a vertical wall of his house. Dennis, the little boy next door, ties a rope from his tricycle to the bottom of the ladder and starts to pull the foot of the ladder away from the house wall. The bottom end of the ladder begins to slide away from the wall at the rate of 1.2 feet per second.
- A. How fast is the top of the ladder sliding down the wall when the top of the ladder is 16 feet from the ground?
- B. How fast is the top of the ladder sliding down the wall when the foot of the ladder is 8 feet from the wall?
- C. How fast is the angle between the top of the ladder and the wall changing when the foot of the ladder is 8 feet from the wall?