

Related Rates In class Examples:

1. A ladder 20 feet long leans against a vertical building. If the bottom of the ladder slides away from the building horizontally at a rate of 2 ft/sec, how fast is the ladder sliding down the building when the top of the ladder is 12 feet above the ground?

b) At what rate is the angle between the ladder and the wall changing when the ladder is 12 feet above the ground?

2. A water tank has the shape of an inverted right circular cone of altitude 12 feet and base radius 6 feet. If water is being pumped into the tank at a rate of 10 gal/min, approximate the rate at which the water level is rising when the water is 3 feet deep. (1 gal = 0.1337 ft³)

b) At what rate is the radius of the water in the tank changing at this instant?

3. At 1:00 pm., ship A is 25 miles due south of ship B. If ship A is sailing west at a rate of 16 mph and ship B is sailing south at a rate of 20 mph, find the rate at which the distance between the ships is changing at 1:30 pm.

4. A right circular cylindrical container with a height of 20 ft and radius of 5 ft is being drained at the rate of 30 cubic ft per hour. At what rate is the depth of the liquid changing when it is half full?