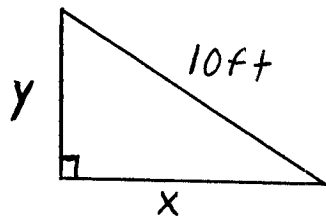


Related Rate Examples

- 1) The radius r of a circle is changing at 5 centimeters/minute. When $r = 2$ centimeters, at what rate is
 - a) its circumference changing?
 - b) its area changing?
- 2) The width x of a rectangle is increasing at a rate of 5 inches/second and the length y is decreasing at a rate of 4 inches/second. When $x = 3$ inches and $y = 2$ inches, at what rate is
 - a) its perimeter is changing?
 - b) its area is changing?
- 3) If the bottom of a 100 foot ladder is pushed toward a wall at a rate of 2 feet/second, how fast is the top of the ladder moving up the wall when the bottom of the ladder is 60 feet from the wall?
- 4) For the following triangle, assume the edge y is decreasing at a rate of 2 feet/minute. At what rate is the area of the triangle changing when $y = 8$ feet?



- 5) Claire Redfield is at the bottom of a cylindrical tank with a base radius of 10 feet. The tank is filling with acid at a rate of 3,000 feet³/second. There's a ladder that Claire can climb at a rate of 10 feet/second. Can she climb faster than the acid is rising?
- 6) Car B is 34 miles directly east of car A and begins moving west at 90 mph. At the same moment car A begins moving north at 60 mph. At what rate is the distance between the cars changing after $1/5$ of an hour?
- 7) A balloon sitting 30 feet away from the base of a 20 foot high light pole begins rising at 3 feet/second from the ground. At what rate is the balloon's shadow moving away from the base of the street light after 6 seconds?
- 8) An egg is dropped from 144 feet high. It will strike the ground 50 feet from the base of a 100 foot high lamp pole. At what rate is the distance between the egg's shadow and the base of the pole changing after the egg has fallen for 2 seconds?