

Related rates (1)

- (1) Oil spills from a rupture container in a circular pattern whose radius increases at a rate of 2 ft/s. How fast is the area of the oil spill increasing when the radius of the spill is 60 ft?
- (2) A woman 6 ft tall is walking at a rate of 3 ft/s toward a street light 18 ft high. At what rate is her shadow length changing?
What is the speed of the tip of her shadow?
- (3) A police car approaching an intersection from the north is chasing a speeding red car that has turned east at the intersection. When the police car is 0.6 miles north of the intersection and the red car is 0.8 miles east, the police measure the rate of change of the distance between them and the red car to be 20 miles per hour. If the police are travelling at 60 miles per hour what is the speed of the red car?

Related rates (2)

- (1) A softball diamond is a square of side 60 ft. A player running from first base to second base has a speed of 25 ft/s. At what rate is his distance from home base changing when he is 10 ft from second base?
- (2) A balloon rising from the ground is tracked by a telescope positioned 50 ft from the balloon's lift-off point. When the telescope's elevation angle is $\pi/4$, the angle is increasing at a rate of 0.14 rad/min. How fast is the balloon rising at that moment?
- (3) Two sides of a triangle are 9 in and 25 in in length and the angle between them is decreasing at a rate of 0.05 rad/s. Find the rate at which the area of the triangle is changing when the angle between the sides is $\pi/6$.