Do Now
Assume that the infected area of an injury is circular.
(a) If the radius of the infected area is 3 mm and growing at a rate of1 mm/hr, at what rate is the infected area increasing?
(b) Find the rate of increase of the infected area when the radius reaches 6 mm.

1/13/2013   cp calc block 36   1

hw presentation
p188,
30;36;42

1/13/2013   cp calc block 36   2

block 36
Quarterly II
Assessment
Blockmorrow

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hw today
all returned tests
extra review packet

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Ch3.5-7
Review

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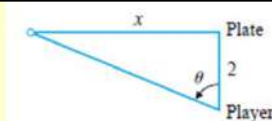
Review 1:
A plane is located x = 40 miles (horizontally) away from an airport at an altitude of h miles. Radar at the airport detects that the distance s(t) between the plane and airport is hanging at the rate of s(t) = −240 mph. *If the plane flies toward the airport at the constant altitude h = 4, what is the speed |x(t)| of the airplane?*

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Review 2:

A baseball player stands 2 feet from home plate and watches a pitch fly by. In the diagram, x is the distance from the ball to home plate and θ is the angle indicating the direction of the player's gaze. Find the rate θ at which his eyes must move to watch a fastball with x(t) = −130 ft/s as it crosses home plate at x = 0.

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Review 3:
Sand is poured into a conical pile with the height of the pile equal to the diameter of the pile. If the sand is poured at a constant rate of 5 m3/s, at what rate is the height of the pile increasing when the height is 2 meters?

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Review 4: *Suppose that you are blowing up a balloon by adding air at the rate of 1 ft3/s. If the balloon maintains a spherical shape, the volume and radius are related by V = (4/3)πr ³. Compare the rate at which the radius is changing when r = 0.01 ft versus when r = 0.1 ft. Discuss how this matches the experience of a person blowing up a balloon.*

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Review 5:
Elvis the dog stands on a shoreline at point (0, 0) m and starts to chase a ball in the water at point (8, 4) m. He runs along the positive x-axis with speed x(t) = 6.4 m/s. Let d(t) be the distance between Elvis and the ball at time t. Find the time and location at which |d(t)| = 0.9 m/s, the rate at which Elvis swims.

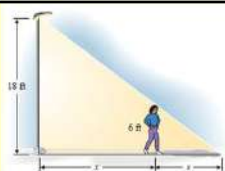1/13/2013   cp calc block 36   11

Review 6a:

Suppose a 6-ft-tall person is 12 ft away from an 18-ft-tall lamppost. (a) If the person is moving away from the lamppost at a rate of 2 ft/s, at what rate is the length of the shadow changing.

Review 6b:

Suppose a 6-ft-tall person is 6 ft away from an 18-ft-tall lamppost. (b) If the person is moving toward the lamppost at a rate of 3 ft/s, at what rate is the length of the shadow changing.

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Review 7: Find y'

$$x^2 y^2 + 3y = 4x$$

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Review 8: Find y'

$$\tan(y^2 + 3) - xy^2 = 2x$$

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Review 9: Find an equation of the tangent and normal line at the given point

$$x^2 y^2 = 4x \text{ at } (1, 2)$$

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Review 10: Find y''

$$3xy + 2y - 3x = \sin y$$

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