Calculus Section 2.6 Related Rates Part II

-Find a related rate.  
-Use related rates to solve real-life problems.

Homework: Page 154 #’s 17, 18, 20, 21bc, 25, 29, 39

**Related Rates with Ratios**  
A conical paper cup 3 in. across the top and 4 in. deep is full of water. The cup springs a leak at the bottom and loses water at a constant rate of 2 cubic inches per minute. How fast is the water level dropping at the instant the water is 3 inches deep? How fast is the radius of the cup changing when the water level is 2 inches?

A six ft. tall man walks at a rate of 3 feet per second toward a light stand that is 20 feet above the ground. When he is 8 feet from the base of the light, at what rate is the tip of his shadow moving? At the same point, what rate is the length of his shadow changing?

**A Changing Angle**An airplane files at an altitude of 5 miles toward a point directly over an observer. The speed of the plane is 600 miles per hour. Find the rates at which the angle of elevation θ is changing when the angle is θ = 30°?

