Name: _____ AP Calculus BC La Cañada High School

Period: ____

HW #6.3

1. A hot air balloon is rising straight up from the ground at 10 m/s. Lily is standing 200 meters away from the launching point. How fast is her angle of elevation changing when the balloon is 150 meters in the air? (**Hint**: Use radians!)	2. When the area of a square is increasing twice as fast as its diagonals, what is the length of its sides? (**Hint**: Find the relation between the area and the diagonal.)
3. Oil spilled from a tanker spreads in a circle whose circumference increases at a rate of 40 ft/sec. How fast is the area of the spill increasing when its circumference is 100π ? (**Hint**: Find the relation between circumference and area or do 2 separate problems with radius or some other way...)	4. **<u>Challenge</u>**: Car A is traveling west at 50 mph and car B is traveling north at 60 mph towards the intersection of the two roads. At what rate are the cars approaching each other when car A is 0.3 mi and car B is 0.4 mi from the intersection?