QUIZ #5 - RELATED RATES

Answer all questions. Show all your work for full credit.

Problem 1. [5 POINTS]. A pebble is dropped into a pond and causes a circular ripple. The radius of the circle increases at a rate of 5 feet per second. How fast is the area enclosed by the ripple increasing at the moment when the radius is 3 feet?

Problem 2. [5 POINTS]. A point P moves along the curve $y = 3x^2 - 5$. When P is at the coordinate $(1, -2)$, x is increasing at a rate of 4 units per second. At what rate is y changing?

Problem 3. [5 POINTS]. Suppose you are drinking soda from a conical paper cup. The cup has a diameter of 8 cm and a depth of 10cm. As you drink, the soda leaves the cup at a rate of 7 cubic centimeters per second. At what rate is the level of the liquid in the cup changing when the liquid is 6 cm deep?