QUIZ 6 - MATH 112 YOUR NAME:

Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Consider the equation $x^3 + xy^2 - xy^3 = 3$ that defines y implicitly as a function of x. Find an equation of the tangent line to the graph of y = f(x) at (x, y) = (-1, 2).



2. The volume of a spherical tumor is increasing at the rate of 32π cm³/week. At which rate does the radius of the tumor increase at the moment when the radius is 4 cm? (Recall the volume of the sphere with radius r is $V = \frac{4}{3}\pi r^3$.)

3. The number of traffic accidents per year in a city of population p is predicted to be

$$T = 0.002p^{3/2}.$$

If the population is growing by 500 people per year, find the rate at which traffic accidents will be rising when the population is 40,000.