QUIZ 7 - MATH 112 Friday, October 26

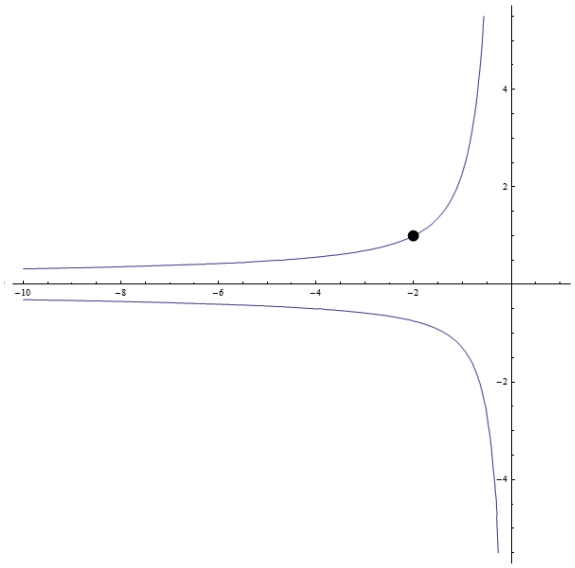
YOUR NAME:_____ George Voutsadakis

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. Find an equation for the tangent line to the graph of

$$x^3y^2 + x^2 = xy - 2$$

at the point $(x, y) = (-2, 1)$.



2. Louise Lacarriere, an alumna of LSSU, who has taken George's Math 112® and is a natural ecologist working for the DNR, has studied closely an ecosystem in which a predator and prey population fluctuate with time. She discovered that the relation between the predator population x (measured in *thousands* of individuals) and the prey population y (measured in *thousands* of individuals) are related by $y = \dfrac{16}{x^3}$. Find the rate of change of the predator population when there are 2,000 predators in the ecosystem and the prey population is increasing at the rate of 12,000 individuals per year. (**Hint:** Construct your related-rates triangle and follow the steps outlined in class.)