Math 226: Quiz **Feb. 26, 1992**

Show your work and circle your final answer.

1. Ground water seeps into a cylindrical retention pond at a rate of 100 ft^3 per minute. There is storm drain above the pond and when the water reaches this level it drains out at a rate proportional to the height h of the pond *above* the storm drain. A county engineer measures the flow in the storm drain to be 50 ft^3 per minute when h is 3 in. Find the limiting value for h.

2. Solve the initial value problem

$$\frac{dy}{dx} = \frac{xy^3}{1+x^2}, \qquad y(0) = -1$$

and describe the interval on which the solution is defined.