MATH 148 QUIZ 10/5/11
NAME:

In problems 1 and 2 find $\frac{dy}{dx}$ by implicit differentiation.

1. $y^2 - x^2 - 2x = 7$

2. $x^2y^2 - x^3y = 16$

3. A hemispherical tank with a radius of 3m is being filled with water at a rate of $4\frac{\text{m}^3}{\text{min}}$. The volume of water in the tank (V) when the water has reached depth h is

$$V = \pi\left(3h^2 - \frac{h^3}{3}\right).$$

Find the rate of change of the the depth with respect to time when $h = 2$m.