

Math 216 - Quiz 2

January 25, 2012

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. Consider the following initial value problem:

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

- (a) (1 point) Find the slope of the solution curve passing through $(0, -1)$.

- (b) (3 points) Use Euler's method with $h = 0.1$ to approximate $y(0.3)$. Show all steps.

(c) (3 points) Find the exact solution of the initial value problem.

(d) (2 points) Use your solution to find the exact value of $y(0.3)$. Then find the percent error in your approximation from Euler's method.

(e) (1 point) Use the direction field shown below to draw a rough sketch of the solution curve passing through $(0, -1)$.

