

### Quiz 3

Math 103 - Introduction to Calculus

July 15, 2008

Name: \_\_\_\_\_ SOLUTION \_\_\_\_\_

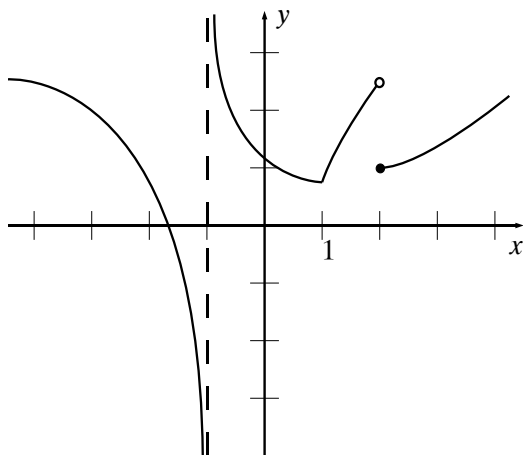
**Note:** *In order to receive full credit, you must show work that justifies your answer.*

1. State two interpretations of a derivative (i.e. two things a derivative can mean).

Possible answers include:

- (a) slope of a tangent line
- (b) instantaneous rate of change
- (c) instantaneous velocity
- (d)  $\lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$

2. The graph of a function  $f$  is given. At what numbers is  $f$  not differentiable, and why?



$f$  is not differentiable at  $x = -1$  because it has a vertical asymptote.  $f$  is not differentiable at  $x = 1$  because it has a sharp corner.  $f$  is not differentiable at  $x = 2$  because it is discontinuous.