

# Math 157 - Quiz 5

September 28, 2016

Name key

Score \_\_\_\_\_

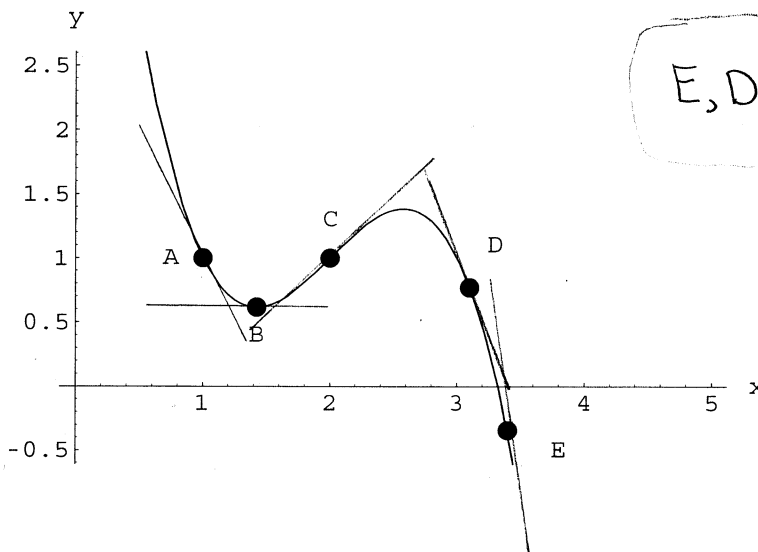
Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) Let  $f(x) = 2/x^2$ . Use at least four small intervals to estimate  $f'(2)$ .

INTERVAL	RATE OF CHANGE
$[1.9, 2.1]$	$\frac{\frac{2}{2.1^2} - \frac{2}{1.9^2}}{0.2} = -0.502509$
$[1.99, 2.01]$	$\frac{\frac{2}{2.01^2} - \frac{2}{1.99^2}}{0.02} = -0.500025$
$[1.999, 2.001]$	$-0.50000025$
$[1.9999, 2.0001]$	$-0.5000000025$

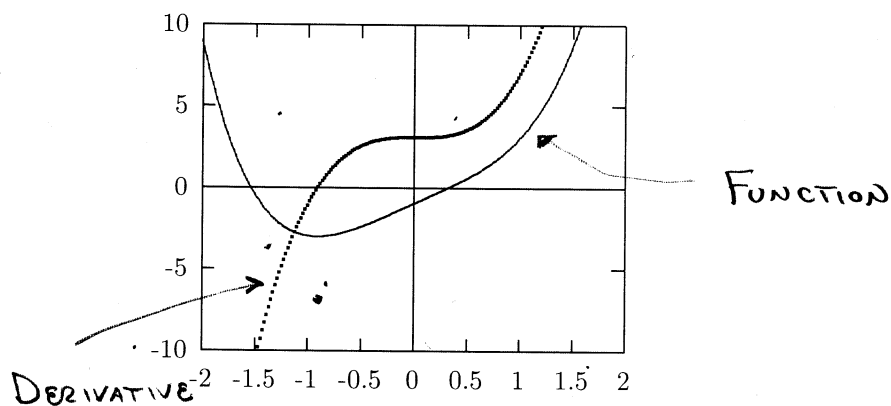
$$f'(2) = -0.5$$

2. (3 points) The graph of the function  $h$  is shown below. Think about the value of  $h'(x)$  at each indicated point. List the points in order of increasing values of  $h'(x)$ .



$$E, D, A, B, C$$

3. (3 points) The following figure shows the graph of a function and its derivative. Which is which? Give at least two reasons (based on the shape of the graphs) to support your conclusion.



① WHERE THE GRAPH OF THE FUNCTION HAS NEGATIVE SLOPE (ROUGHLY FROM  $-2$  TO  $-1$ ), THE DERIVATIVE HAS NEGATIVE VALUES

② WHERE THE FUNCTION'S GRAPH HAS A HORIZONTAL TANGENT LINE (CLOSE TO  $-1$ ), THE DERIVATIVE HAS VALUE ZERO