

# QUIZ 3 - MATH 111

Friday, January 31

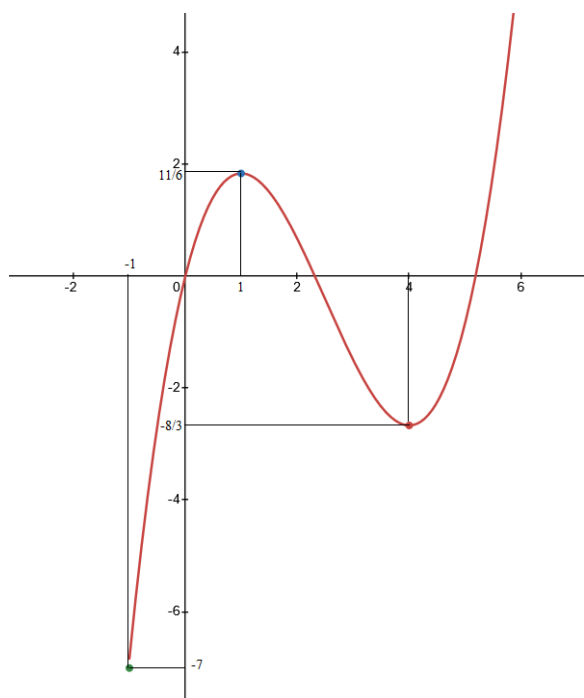
YOUR NAME: \_\_\_\_\_

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Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Find the average rate of change of the function  $f(x) = 2x^2 + 7$  over the interval  $[1, 3]$ .

2. [4 points] Consider the function  $y = f(x)$  whose graph is shown in the figure.



(a) Find the interval over which  $f$  is increasing/decreasing.

(b) Find the relative maxima and minima.

(c) Find the absolute maxima and minima.

3. [6 points]

- (a) Consider the function  $f(x) = -x^2 + 5$  and the function  $y = g(x)$  given by the following table.

$x$	0	1	2	3	4	5
$g(x)$	-5	7	0	1	2	-1

Compute the following showing all steps.

$$(f \circ g)(3) =$$

$$(g \circ f)(2) =$$

- (b) Suppose  $f(x) = \frac{x+5}{3x-1}$  and  $g(x) = x^2 + 2$ . Find a formula for  $(f \circ g)(x)$  showing all steps and simplify.