

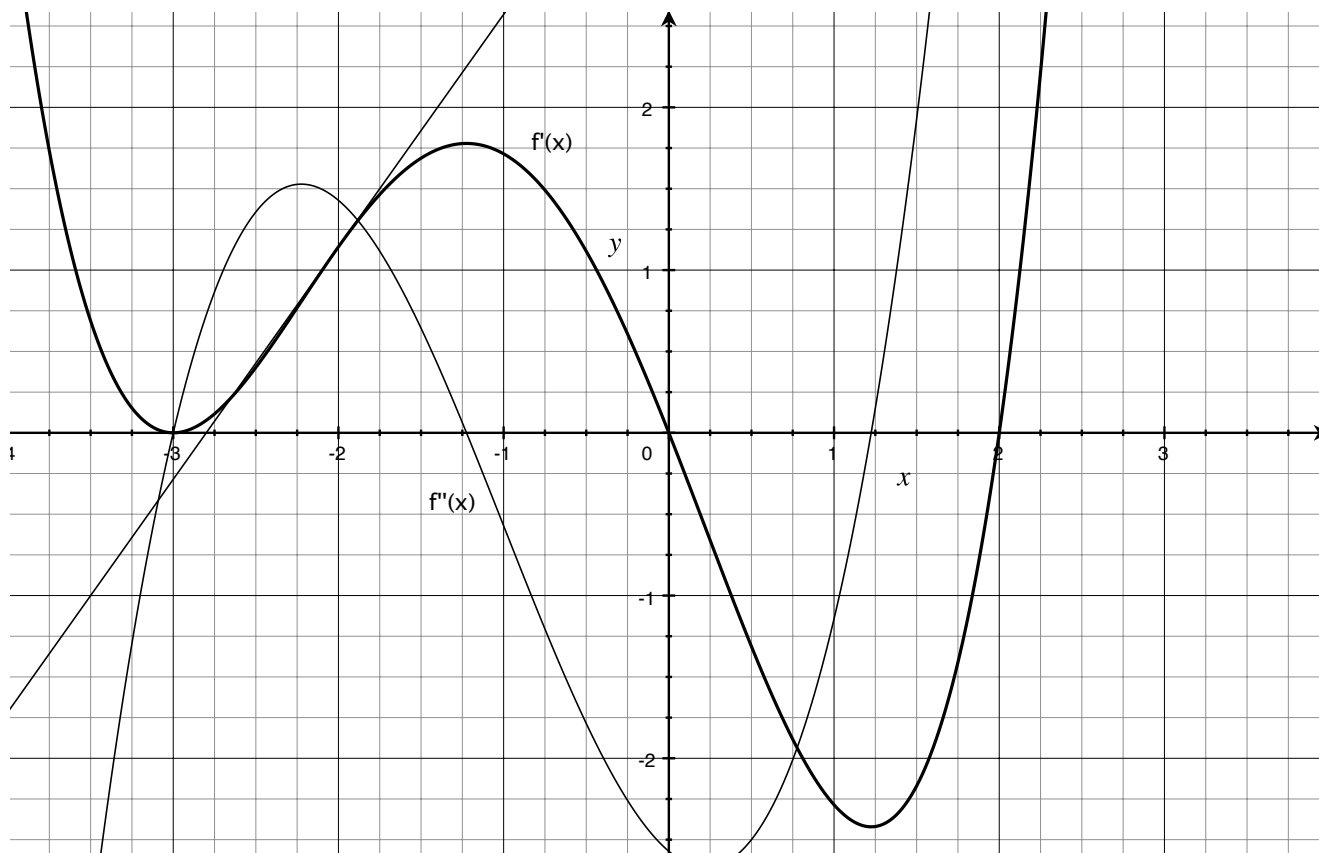
Math 105 Quiz 2

§1.4-§1.7

Name:

Show all work for credit. You may use a calculator.

1. The following is a graph of  $f'(x)$ . Assume the graph is defined over all real numbers.



- (a) On what intervals is  $f(x)$  increasing?

$$(-\infty, 0) \cup (2, \infty)$$

- (b) On what intervals is  $f(x)$  decreasing?

$$(0, 2)$$

- (c) Find all the stationary points of  $f(x)$ . Classify them as max points, min points, or neither.

Stationary points are at  $x = -3$ ,  $x = 0$ , and  $x = 2$ .

From the graph,  $x = -3$  is neither,  $x = 0$  is a max, and  $x = 2$  is a min.

- (d) Where does  $f(x)$  have inflection points?

Yes, at  $x = -3$ ,  $x = -1.25$ , and  $x = 1.25$

2. Using the graph above. Calculate an estimate for the second derivative ( $f''(x)$ ) at  $x = -2$  by drawing in the tangent line.

I used points  $(-1.25, 2.25)$  and  $(-3.5, -1)$  so the slope is  $\frac{2.25 - (-1)}{-1.25 - (-3.5)} = \frac{3.25}{2.25} = 1.44$ .

3. On the graph above. Draw a picture of  $f''(x)$ .