

Solutions

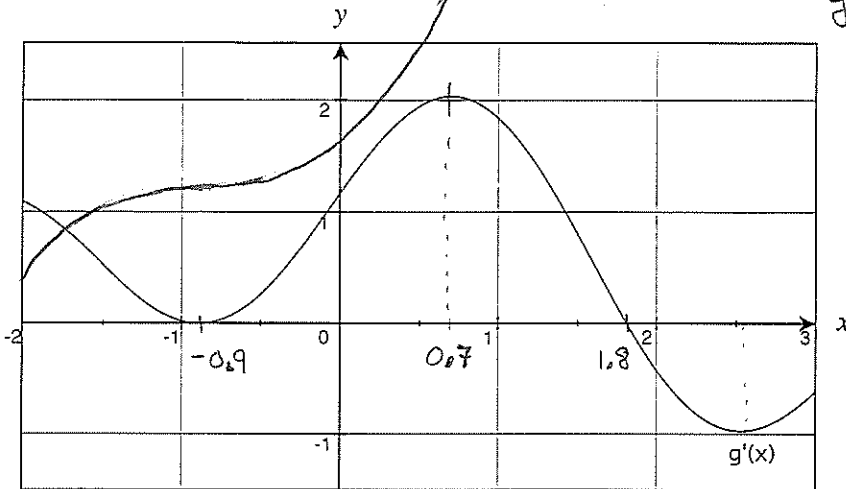
Name: _____

Math 105: Fall 2013

Quiz 2: September 20

Good Luck!

1. The graph below is a graph of $y = g'(x)$, the derivative of g . Use the graph to answer the following questions. You will probably have to estimate some answers.



$g(x)$ (one of many possibilities)

It was not necessary to graph g in order to answer the questions.

- (a) On what interval(s) is g' positive? Briefly justify your answer.

$[-2, -0.9)$ and $(-0.9, 1.8)$ g' is positive when the graph is above the x -axis

- (b) On what interval(s) is g' increasing? Briefly justify your answer.

$(-0.9, 0.7)$ and $(2.5, 3)$ g' is increasing when the y -values are getting larger as x gets larger

- (c) On what interval(s) is g increasing? Briefly justify your answer.

$(-2, 1.8)$ If $g' > 0$ then g is increasing so g is increasing on $(-2, -0.9) \cup (-0.9, 1.8)$. But we also notice that at $x = -0.9$, $g(x)$ has a "terrace" and g is also increasing there.

- (d) On what interval(s) is g concave up? Briefly justify your answer.

$(-0.9, 0.7)$ and $(2.5, 3)$ g is concave up whenever g' is increasing.

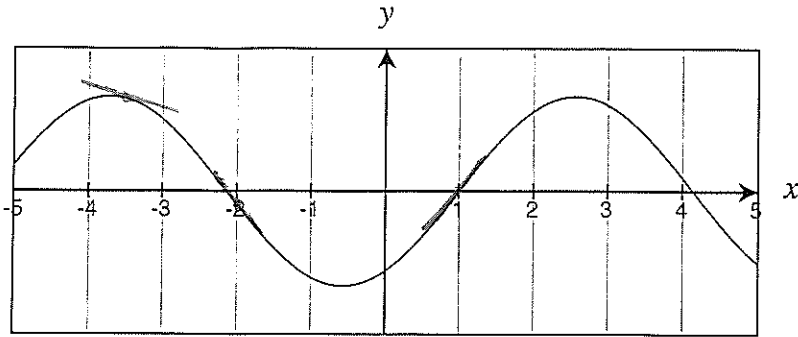
- (e) For what x -value(s) does g have a local maximum? Briefly justify your answer.

$x = 1.8$ candidates for max/min are when $g'(x) = 0$. So at $x = -0.9$ or $x = 1.8$.

$g'(x) \oplus \quad \oplus \quad \ominus$
 $\quad \quad \quad -0.9 \quad \quad \quad 1.8$
 $\quad \quad \quad \diagdown \quad \quad \quad \diagup$
 $\Rightarrow x = 1.8$ is a local max.

OVER

2. The graph below is the graph of $y = f(x)$. List $f'(-3.5)$, $f'(-2)$, $f'(1)$ in increasing order.



$f'(-3.5)$
slightly
negative

$f'(2)$
negative

$f'(1)$
positive

so $f'(2)$, $f'(-3.5)$, $f'(1)$