

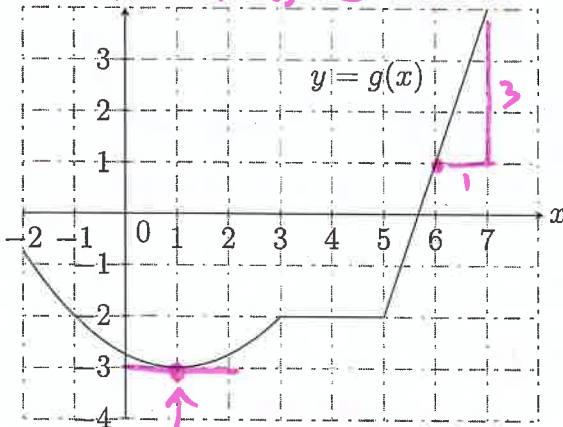
# MAT 136 (Calculus I), Quiz 5, Prof. Jim Swift

Name: key

You may work on this in groups, but turn in your own quiz.

1. Let  $f(x) = 2x - 7$  and suppose  $g$  is given by the graph. Use this information to find the following:

$f'(x) = 2$       $f(6) = 2 \cdot 6 - 7 = 12 - 7 = 5$   
 so  $f'(6) = 2$



$g'(1) = 0$   
 (horizontal tangent line)  
 $g(6) = 1$   
 $g'(6) = 3$   
 (slope of  $g$  at 6)

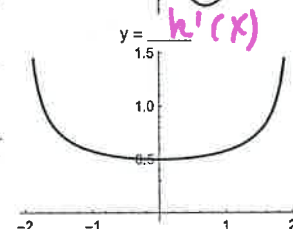
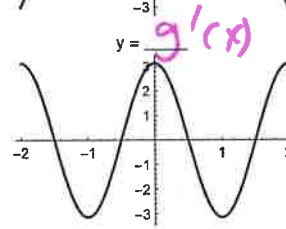
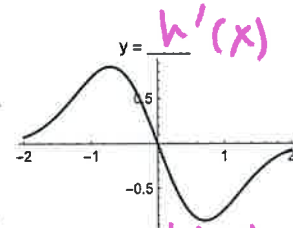
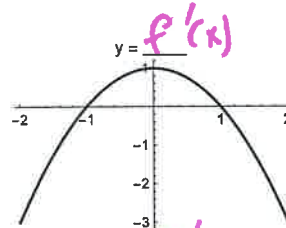
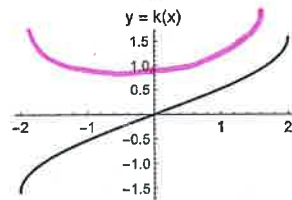
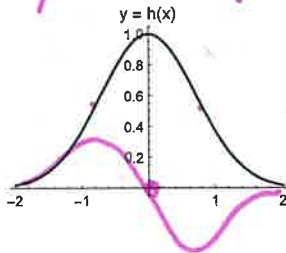
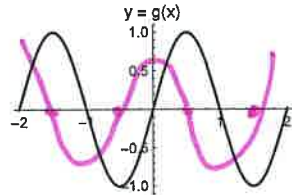
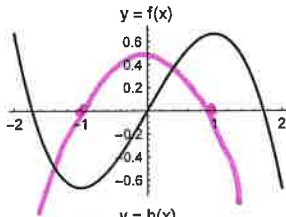
1. Find  $v'(6)$  if  $v(x) = f(x)g(x)$ .

$v'(x) = f'(x)g(x) + f(x)g'(x)$   
 so  $v'(6) = f'(6)g(6) + f(6)g'(6)$   
 $= 2 \cdot 1 + 5 \cdot 3 = 2 + 15$   
 $v'(6) = 17$

2. Estimate  $p'(6)$  if  $p(x) = g(g(x))$ .

$p'(x) = g'(g(x)) \cdot g'(x)$   
 so  $p'(6) = g'(g(6)) \cdot g'(6)$   
 $= g'(1) \cdot 3$   
 $= 0 \cdot 3 = 0$

2. Fill in each blank in the right figures with  $f'(x)$ ,  $g'(x)$ ,  $h'(x)$  or  $k'(x)$  to match the graph of the derivative to the graph of the function.



The derivative can be sketched on the same axes.

1. Mark where the derivative is 0.
2. Consider the sign of the derivative.