

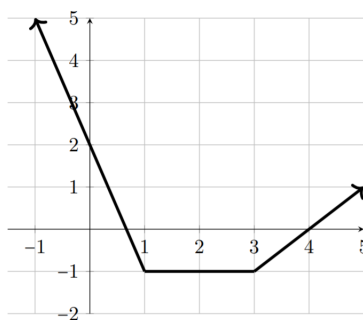
Math 135, Calculus 1, Fall 2020

Written Homework 11-06

Directions: Write your solutions neatly and clearly, and submit to Canvas. In these problems, you should show all of your work in complete mathematical "sentences", writing complete English sentences when you explain your logic. You are free (and encouraged!) to work with others, but make sure the solutions you write up your solutions independently.

Exercise 1. A table of the function values for $f(x)$ and $f'(x)$, and a graph of the piecewise linear function $g(x)$ are shown below.

x	$f(x)$	$f'(x)$
-1	11	-7
0	2	-2
1	-2	5
2	9	3
3	0	4
4	1	2



$y = g(x)$

- (a) If $h(x) = f(g(x))$, find $h'(0)$.
- (b) If $p(x) = (g(x))^3$, find $p'(2)$.
- (c) If $k(x) = [g(f(x))]^{2/3}$, find $k'(1)$.

Exercise 2. Find the equations of all tangent lines to the curve $x^2 + 4y^2 = 8$ that pass through the point $(-4, 0)$.

Exercise 3. Suppose f is a one-to-one differentiable function, and its inverse function f^{-1} is also differentiable. Use implicit differentiation to show that

$$(f^{-1})'(x) = \frac{1}{f'(f^{-1}(x))}.$$