Instructor: Leo Goldmakher

Williams College
Department of Mathematics and Statistics

MATH 140 : CALCULUS II

Problem Set 1 – due Wednesday, February 12th

INSTRUCTIONS:
Please submit this at the *start* of Wednesday's class. Don't worry if you don't manage the get an answer for any particular question, but please give each problem an honest try (and record what you were able to accomplish, even if you didn't solve it). Eventually you should make sure to understand the problems, as some of them may appear on Monday's in-class quiz. You are encouraged to collaborate with other students on these problems. However, please write up your solutions in isolation from one another.

1.1 Concept problem 3.1 # 3 on page 116 of the book.

1.2 Let $f(x) = -2x + 1$. In Monday's class we saw that $f'(3) = -2$ from the geometric definition of the derivative. Use the algebraic (limit) definition to find $f'(3)$.

1.3 Let $f(x) = 3x^2 - 7$ and $g(x) = x^2 - 4x + 7$.

(a) Find all values of a for which you can evaluate $f'(a)$ from the *geometric* definition of the derivative. At each such value of a, give $f'(a)$.

(b) Use the algebraic (limit) definition of the derivative to determine $f'(5)$.

(c) Find all values of a for which you can evaluate $g'(a)$ from the *geometric* definition of the derivative. At each such value of a, give $g'(a)$.

(d) Use the algebraic (limit) definition of the derivative to determine $g'(5)$.