Rutgers University
Math 151

Section 3.1-2: Derivatives and Tangent Lines - Worksheet

1. For the functions below, find the value of the derivative and an equation of the tangent line at the point indicated. (You must use the limit definition of the derivative in this problem - you cannot use derivative rules.)

   (a) $f(x) = \dfrac{3x}{1 - 2x}$ at $x = 1$.

   (b) $f(x) = \sqrt{5x - 1}$ at $x = 2$.

   (c) $f(x) = 18x^{-2}$ at $x = -3$.

   (d) $f(x) = 2x^3 + 5x + 3$ at $x = -1$.

   [Advanced]

   (e) $f(x) = 3\tan(4x)$ at $x = 0$.

   (f) $f(x) = x^{2/3}$ at $x = 8$.