Math 131 - Homework 3

March 3, 2021

Name _____

Score _____

The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. This assignment is due on March 24.

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1. (3 points) A potato is launched vertically upward with an initial velocity of 100 ft/s from a potato gun at the top of an 85-foot-tall building. The distance in feet that the potato travels from the ground after t seconds is given by $s(t) = -16t^2 + 100t + 85$.

   (a) Determine when the potato reaches its maximum height.

   (b) Determine the velocity of the potato as it hits the ground.

2. (1 point) Find $\dfrac{dy}{dx}$ if $y = \dfrac{\tan x}{1 - \sec x}$.

Turn over.

3. (4 points) Find $\dfrac{dy}{dx}$.

   (a) $y = (2x^3 - x^2 + 6x + 1)^3$

   (b) $y = \sin(\cos 7x)$

4. (2 points) Find an equation of the line tangent to the graph of the equation $x^2y^2 + 5xy = 14$ at the point $(2, 1)$.