Math 201 Mock Quiz 9

December 2, 2019

Name: _____

Instructions: No calculators. Use provided scrap. Write your fully simplified answers in the space provided.

1. For a function $f(x)$ write down the formula for its linearization at a. $L(x) =$ _____

2. Suppose $y = f(x)$, find the differential $dy =$ _____

3. A pebble is dropped into a calm pond, causing ripples in the form of concentric circles. The radius r of the outer ripple is increasing at a rate of π feet per second. At what rate is the total area A of disturbed water changing when $r = 2$?

    (a) The equation I used (before differentiating) is _____

    (b) After differentiating, I have _____

    (c) The rate of change of A is (state your answer as an equation involving a derivative): _____

4. Use linear approximation or differentials to approximate $(8.1)^{2/3}$ by completing the following:

    (a) Define a function to use: $f(x) =$ _____

    (b) $x =$ _____ , $a =$ _____

    (c) The general formula (in f) used to make the approximation _____

    (d) The approximate value is _____

Bonus (Complete the other problems to be eligible):

1. For a function $f(x)$, define "critical number of f" _____

_____

2. Suppose a function is defined on a closed interval $[a, b]$, define the "absolute minimum of f on $[a, b]$"

_____