

University of Ottawa
Department of Mathematics and Statistics

MAT1339

Calculus and Vectors

Assignment 2, DUE Feb 26 in class, at the beginning of lecture;

Winter 2019

Instructor: C. Rada

Study!

Last Name: _____

First Name: _____

Student Number: _____

NO LATE ASSIGNMENTS! NOT ALL EXERCISES WILL BE MARKED. ONLY SOME.
SHOW ALL YOUR WORK (AS IN CLASS). USE THE BACKS OF PAGES IF NECESSARY.

1. [4 points] Graph the function: $f(x) = \frac{x^2+7x+3}{x^2}$. Find domain, asymptotes, limits, first and second derivatives, critical points, max, min, inflection points, when f is increasing, decreasing, concave up, concave down.

Solution:

2. [4 points] Using Rules find the derivatives of: $f(x) = (\sin(2x) + 4\cos(-x) + \tan(7x - 9))^8$, $g(x) = \frac{e^{2x+1}}{\ln(x+5)}$, $h(x) = (\sin(\ln x) + e^{\sqrt{x}})^2(\cos(e^{8x}))^5$, $k(x) = \frac{(5+\sin(5x))^5}{\cos(2x+1)}$. DO NOT simplify!

Solution:

3. [2 points] Find the equation of tangent line to graph of the given function at the indicated point:

a) $f(x) = \cos^3(x - 1) + \sin(1 - x) + 5$, $x = 1$.

b) $f(x) = e^{x-1} + 4$, $x = 1$.

Hint: always start by defining the equation you need to find: $y = mx + b$, then declare what the slope is: $m = f'(a)$, where a is given in statement. So, one needs to get by RULES $f'(x)$, and then plugin your a . To get b one must plug in a for x , and $f(a)$ for y .

In a), b) the value of a is 1, while in c) it is -1 .

SOLUTION:

Study!