MATH-19S: EXAM 2
UNIVERSITY OF VERMONT
FALL 2010

BLAKE FARMAN

Name: _____

Problem	Points Earned	Possible Points
1		4
2		4
3		4
4		4
5		4
Total		20

Date: November 12, 2010.

Show all work for full credit.

(1) Let f be the function defined by

$$f(x) = x^6 e^x.$$

Compute $f'(x)$.

(2) Let f be the function defined by

$$f(x) = \frac{7\log_e(x^2+3)}{x^2}$$

Compute $f'(x)$.

(3) Let f and g be the functions defined by

$$f(x) = -2x - 1 \quad \text{and} \quad g(x) = x^2 + 4.$$

a Explicitly compute the composition of f and g, $(f \circ g)(x)$.

b Use the definition of the *Chain Rule to compute* $(f \circ g)'(x)$.
[Hint: You can check your answer by differentiating the function in part (a)]

(4) Let f be the function defined by

$$f(x) = \frac{1}{3}x^3 - x + 13$$

a Find the critical points of f.

b Identify any relative extrema of f as well as any horizontal or vertical asymptotes.

c Find any inflection points.

d Use the information from parts (a)-(c) to sketch the graph of f.

(5) Let f be the function defined by

$$f(x) = \frac{1}{x+3}.$$

a Find the critical points of f.

b Identify any relative extrema of f as well as any horizontal or vertical asymptotes.

c Find any inflection points.

d Use the information from parts (a)-(c) to sketch the graph of f.