MAT 1330, Fall 2011 Assignment 5

Due WED Nov. 16, 8:30am at the beginning of class,
or in the boxes until Friday Nov. 18, 5pm
Late assignments will not be accepted; nor will unstapled assignments.

Instructor (circle one): Jason Levy Robert Smith? Olga Vassilieva Catalin Rada

DGD (circle one): 1 2 3 4

Student Name _____ Student Number _____

By signing below, you declare that this work was your own and that you have not copied from any other individual or other source.

Signature _____

QUESTION 1. Consider the function $f(x) = \frac{x-4}{x^2}$. Follow these steps to graph the function.

(a) The domain of f is

(b) The x-intercept(s) of f are

(c) The derivative of f is $f' =$

(d) The critical point(s) of f are

(e) The second derivative of f is $f'' =$ [ ]

(f) The point(s) of inflection are

[ ]

(g) Find $\lim_{x \to 0^+} f(x) =$ [ ], $\lim_{x \to 0^-} f(x) =$ [ ]

(h) Find $\lim_{x \to -\infty} f(x) =$ [ ], $\lim_{x \to \infty} f(x) =$ [ ]

(i) The equation(s) of the vertical asymptote(s) [ ]

(j) The equation(s) of horizontal asymptote(s) [ ]

(k) The graph of f is

QUESTION 2. Consider the function $f(x) = \frac{x}{2} + \cos(x)$. Follow these steps to graph the function over the interval $[0, \pi]$.

(a) The derivative of f is $f' =$

(b) The critical point(s) of f are

(c) The second derivative of f is $f'' =$

(d) The point(s) of inflection are

(e) Find $f(0) =$, $f(\frac{\pi}{6}) =$

Find $f(\frac{\pi}{2}) =$,$f(\frac{5\pi}{6}) =$

Find $f(\pi) =$

(f) The graph of f is

QUESTION 3. Find all local maximums and minimums (if any) and all inflection points of the function $f(x) = xe^{2011x}$.