

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

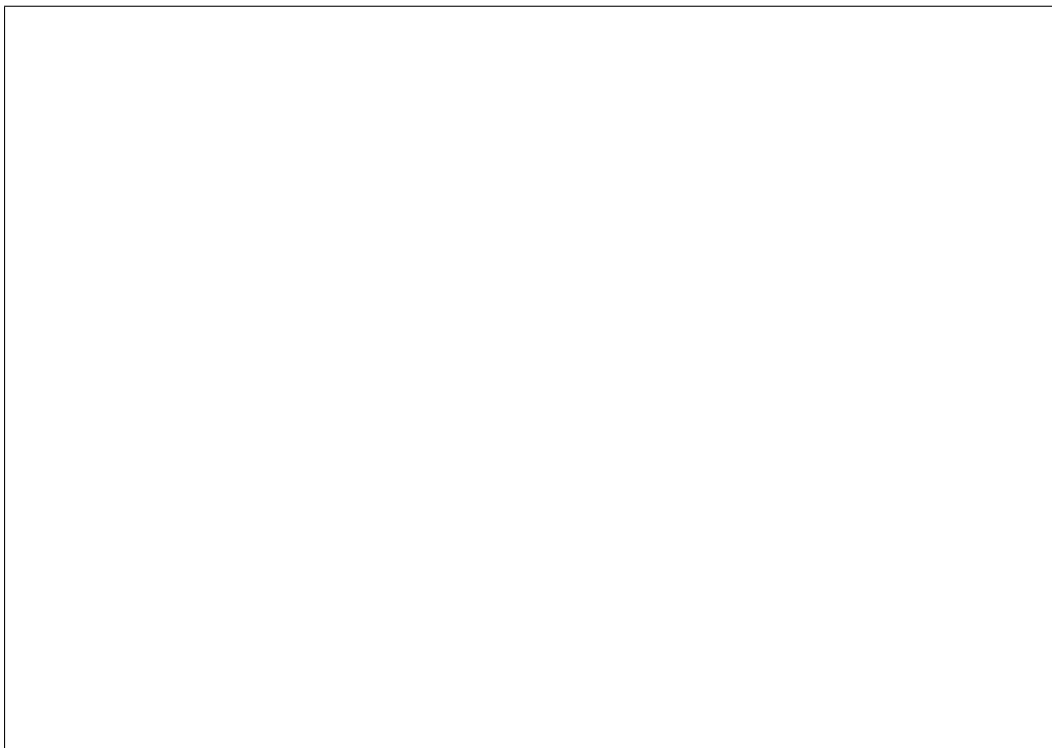
(g) Find  $\lim_{x \rightarrow 0^+} f(x) =$  ,  $\lim_{x \rightarrow 0^-} f(x) =$

(h) Find  $\lim_{x \rightarrow -\infty} f(x) =$  ,  $\lim_{x \rightarrow \infty} f(x) =$

(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  $f(x) = xe^{2011x}$ .