Homework #5   Name: _____

Math 131 Section: _____   Row: _____

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This assignment is due by 11 am on March 2, 2007 You can turn it in to me in class or drop it by the office, **Blocker 640D**. Be sure that you <u>follow the homework rules</u>, they can be found on your syllabus. Please work the problems in the order that they are listed.

Give all answers to at least 4 decimal digits. Be careful to not round intermediate steps since this can cause problems with your final answer.

1. Use this graph to answer part (a) and (b). Be sure to label your results.
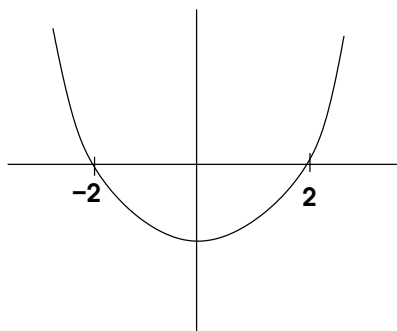
   (a) If the graph is of $f''(x)$, give the intervals where $f(x)$ is concave up and concave down.

   (b) If the graph is of $f'(x)$, give the intervals where $f(x)$ is concave up and concave down.

2. Sketch a graph of a function that meets these requirements and that you can trace the graph without picking up your pen, i.e. it is continuous. For $x < 5$ the slopes of the function are positive and decreasing. For $x > 5$ the slopes of the function are negative and increasing.

3. Find the indicated derivatives of the following. You do not have to simplify.

   (a) y' for $y = 6x^5 - 7x + 3^8$

   (b) y' for $y = 5^{3x} + \frac{7}{x^3}$

   (c) y'' for $y = 7x^5 + 2x^4 + e^{6x}$

4. Find the derivatives of the following. You do not have to simplify.

   (a) $y = (x^5 + 3x - 5)^8$

   (b) $y = \ln(x^4 - 7e^{5x} - 9)$

   (c) $y = \sqrt[3]{x^9 + 23x}$

5. Find the equation of the tangent lines for these functions at the indicated values of x.

   (a) $y = x^4 - 7x^3 - 5x + 1$ at $x = 2$

   (b) $y = \ln(x^3 - 4x + 1) + 2x$ at $x = 2$

6. (a) problem 50 from section 3.3 in the textbook.

   (b) problem 52 from section 3.3 in the textbook.