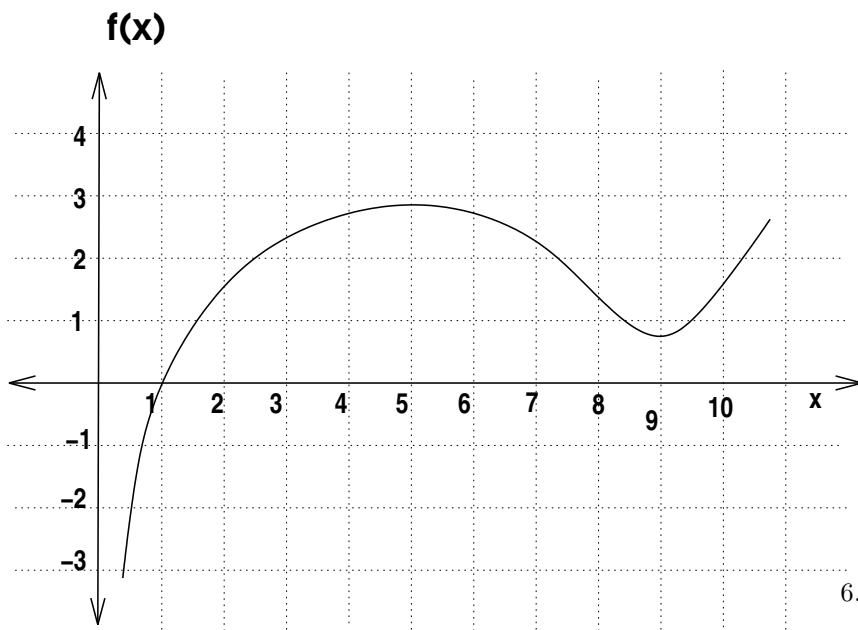


This assignment is due by 3:30 pm on February 26, 2009 You can turn it in to me in class or drop it by the office, **Blocker 640D**. Be sure that you follow the homework rules, they can be found on your syllabus. Please work the problems in the order that they are listed.

Do not use the product rule or the quotient rule.

1. Use the graph to answer these questions.

- Estimate $f'(1)$
- Estimate $f'(3)$
- At what values of x is $f'(x) = 0$?



2. Find the derivatives of these functions.

- $y = x^8 - 7x^4 + 3x^2 + 5$
- $y = (x^3 + 6)(x^2 + 4)$

3. Find the derivatives of these functions.

- $y = \frac{7}{x^4} + \frac{10}{x}$
- $y = \sqrt{x^5} + 5x^{1.8}$

4. Find the derivatives of these functions.

- $y = 10\sqrt[5]{x^2} + 7^4$
- $y = \frac{x^3 + 5x + 1}{x^2}$

5. Find the equation of the tangent line for these functions at the indicated value of x .

- $f(x) = 3x^4 - 7x^3 - 5x + 6$ at $x = 4$
- $g(x) = \frac{400}{x^3} - \frac{8}{x}$ at $x = 2$

6. The table gives the following values of $f(x)$ and $g(x)$ and their derivatives.

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
3	2	-3	7	10
4	-5	-1	3	2

Use the function $J(x) = 4f(x) - 7g(x)$ to answer these questions.

- Find the equation of the tangent line at $x = 4$.
 - Find the equation of the tangent line at $x = 3$.
7. (a) Find the values of x where the function $f(x) = \frac{1}{4}x^4 + \frac{2}{3}x^3 - 12x^2 + 17$ has a horizontal tangent line.
- (b) Find the values of x where the function $f(x) = 2x^3 - 3x^2 - 90x + 10$ will have an instantaneous rate of change of 30