

Math123 (Calculus I)
Handwritten Assignment 4

This assignment covers U2HW3.1, U2HW3.2, U2HW3.3 and U2HW3.4

Handwritten homework is not graded but meant to help you prepare for the exam. If you do not do the handwritten homework and review the solutions it will be difficult to pass the exams. Solutions will be posted on the Lecture Video page at ProfessorTrimble.com.

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Problem One (10 points)

Determine the derivative of the following function *using the limit definition of the derivative*. To start, write the general formula of the limit definition of the derivative. Be sure to use all correct notation and show all of your neat, organized, thorough work.

$$g(x) = 4x^2 + 2x$$

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Problem Two (10 points)

Determine the derivative of the following function *using the limit definition of the derivative*. To start, write the general formula of the limit definition of the derivative. Be sure to use all correct notation and show all of your neat, organized, thorough work.

$$p(x) = \frac{4}{x^2}$$

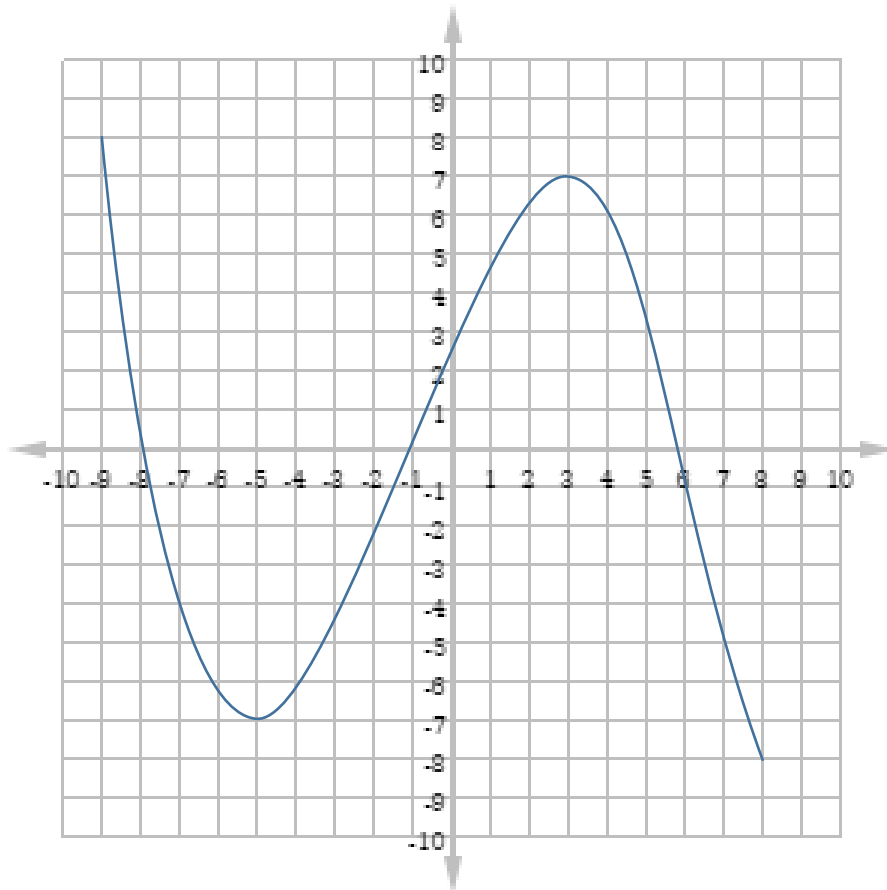
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Problem Three (10 points)

The graph of $f(x)$ is shown below. On the same set of axes graph $f'(x)$. Below the graph explain your reasoning thoroughly for each part of your derivative graph.



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Problem Four (10 points)

Find the derivative of each function. Be sure to use appropriate notation and show all of your work to receive credit. Simplify the derivative completely.

$$\frac{d}{dw}(-2w^4 + 3w^5 - 4w + 8w^{-1} - 4)$$

$$\frac{d}{dx}(\sqrt{x} + 2)$$

Find the equation of the tangent line (in slope-intercept form) to the graph of $f(x) = \frac{1}{2}x^4 + x$ at $x = 2$.

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Problem Five (10 points)

Find the derivative and simplify your answer completely. Be sure to use appropriate notation and show each step. To start, write the general form/rule of the derivative rule you are using.

$$\frac{d}{dx}((x^3 + 4x^2 - x)(x - 2))$$

$$\frac{d}{dx}\left(\frac{3x}{x^2 + 2x - 1}\right)$$