

HOMEWORK 2 - MATH 112

DUE DATE: Monday, January 26

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Read each problem very carefully before starting to solve it. One part of each problem will be chosen at random and graded. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

- Use the limit definition to find the derivatives.
 - $f(x) = x^2 - 4$
 - $f(x) = \sqrt{x-1}$
 - $f(x) = \frac{1}{x+2}$
- Find the equation of the tangent line to the graph of f at the indicated point.
 - $f(x) = x^2 - 2$ at $(2, 2)$.
 - $f(x) = x^3 + 2x$ at $(1, 3)$
 - $f(x) = \sqrt[3]{x} + \sqrt[5]{x}$ at $(1, 2)$
- Find the derivatives of the functions
 - $f(x) = x^3 - 2x + 4$
 - $f(x) = 4x^{-2} + 2x^2$
- Find the value of the derivative of the function at the indicated point
 - $f(x) = -\frac{1}{2} + \frac{7}{5}x^3$ at $(0, -\frac{1}{2})$
 - $f(x) = (2x+1)^2$ at $(0, 1)$
- Find $f'(x)$
 - $f(x) = (x+4)(2x^2-1)$
 - $f(x) = \frac{2x^3-4x^2+3}{x^2}$
- The revenue in dollars from renting x apartments can be modeled by $R = 2x(900 + 32x - x^2)$.
 - Find the additional revenue when the number of rentals is increased from 14 to 15.
 - Find the marginal revenue when $x = 14$.
- Find the derivatives of the functions
 - $f(x) = (2x^2 - 3)(4 - x^2 - x^4)$
 - $f(x) = \sqrt[3]{x}(\sqrt{x} + 3)$
 - $f(x) = \frac{3x-2}{2x-3}$
 - $f(x) = \frac{5}{x^2+2x+2}$
- Find the equation of the tangent line to $f(x) = \frac{x+5}{x-1} \cdot (2x+1)$ at $(0, -5)$.