

Agenda/Objectives/Notes Calculus Chapter 2 Sections 2.1 – 2.3 Test

Test Objectives

1. Find the derivative of a function using the limit definition: $\lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$.

EX: Find the derivative of $f(x) = -2x^2 + 3x - 4$ using the limit definition of a derivative.

2. Find equations of tangent lines.

EX: Find the equation of the line that is tangent to $f(x) = x^3 + 2$ and is parallel to $3x - y - 4 = 0$.

3. Determine the point(s) where the graph of a function has a horizontal tangent.

EX: Determine the point(s) where the graph $h(x) = 2x^3 - 6x^2$ has a horizontal tangent.

4. Find the slope of a graph of a function at a given value.

EX: Find the slope of the graph of $m(n) = n^{\frac{2}{3}} - n^{\frac{1}{4}}$ at $n = 1$.

5. Use the product rule to differentiate a function.

EX: Use the product rule to differentiate $y = x^{-2} \cos x$.

6. Use the quotient rule to differentiate a function.

EX: Use the quotient rule to differentiate $f(x) = \frac{3x - 1}{4x - 9}$.

7. Find the second derivative of a function.

EX: Find the second derivative of $P(t) = \frac{-3t^2 - 2t + 3}{t}$.