

The University of Calgary
Department of Mathematics and Statistics
MATH 249
Worksheet #3

1. Using the **definition of derivative** find $f'(-1)$ if $f(x) = \frac{4x}{3-x}$.
2. Find y' if $y = (\frac{x^6}{2} - 2x)(4 + \frac{1}{\sqrt{2x}})$ for $x > 0$.
3. Find all points on the graph of $y = \frac{1}{2x^3 + x^2 + 1}$ where the tangent is horizontal.
4. Using the definition of derivative find $f'(3)$ if $f(x) = \sqrt{\frac{x}{3} + 3}$.
5. Find $f'(-1)$ if $f(x) = (\frac{x^3}{6} + \frac{1}{2x})(6 + 2x^2)^{\frac{1}{3}}$.
6. Find all points on the graph of $y = \frac{2x}{1+3x}$ where the tangent is parallel to the line $y - 2x = 3$.
7. Using the definition of derivative find $f'(\frac{1}{2})$ if $f(x) = 2x - \frac{1}{x}$.
8. Find y' if $y = \sqrt{7x + \frac{3}{x^2}} + 4\sqrt{x}$ for $x > 0$.
9. Find an equation of the tangent line to $y = \frac{2x-3}{4-2x^5}$ at $x = -1$.