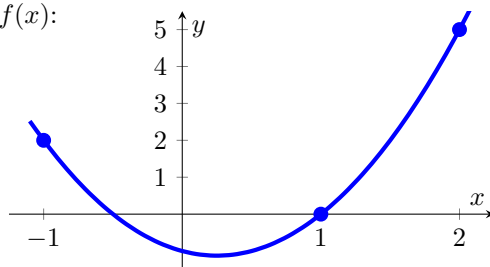


Name: _____

Be sure to show your work!

#1. Consider the following graph of $y = f(x)$:

- (a) Draw the secant line through the point located at $x = -1$ and $x = 1$. Also, draw the secant line through the points at $x = 1$ and $x = 2$.
- (b) Find the average rate of change of $f(x)$ as x changes from $x = -1$ to $x = 1$. Then find the equation of the corresponding secant line.
- (c) Find the average rate of change of $f(x)$ as x changes from $x = 1$ to $x = 2$. Then find the equation of the corresponding secant line.

#2. Consider the following table of information about the function $g(x)$ and its derivative $g'(x)$:

$x =$	-2	0	3	6
$g(x) =$	1	4	-2	0
$g'(x) =$	5	-1	0	2

- (a) Find the equation of the line tangent to $y = g(x)$ based at $x = -2$.

- (b) Find the equation of the line tangent to $y = g(x)$ based at $x = 3$.

#3. For each of the following functions, (i) Find the derivative using rules/short cuts (like the power rule, etc.) and then (ii) Find the derivative using the limit definition: $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$.

(a) $f(x) = 2x^3 - x + 5$ (i) $f'(x) =$ _____

(ii) $f'(x)$ by limit definition...

(b) $f(x) = \frac{1}{x}$ (i) $f'(x) =$ _____

(ii) $f'(x)$ by limit definition...