Name: _____

The Derivative

1) Find the derivative of the function by the limit process.

   1) $f(x) = x^2 - 2x + 3$

   2) $f(x) = \sqrt{x} + 1$

2) Given the function $f(x) = 3x^2 + 6x - 8$

   a) Find the difference quotient $\dfrac{f(x+h) - f(x)}{h}$

   b) Find $\lim\limits_{h \to 0} \dfrac{f(x+h) - f(x)}{h}$

   c) The derivative of $f(x) = 3x^2 + 6x - 8$ is
   $f'(x) =$

   d) Complete the table:

The value of the derivative at x = -1 is	$f'(0) =$	$f'(-2) =$

   e) Complete the table with the values of the slope of the line tangent to the graph of $f(x) = 3x^2 + 6x - 8$ at the given point

At the point when x = -1	At the point (0, -8)	At the point x=-2

3) Using the definition of derivatives find the derivative of each of the following functions.

   (1) $f(x) = x^2 - 6$

   (2) $f(x) = \dfrac{4}{x}$

   (3) $f(x) = \sqrt[3]{x}$

   (4) $f(x) = \dfrac{1}{2x - 3}$