1) Analyze the function behavior at/near the point $x = 2$.
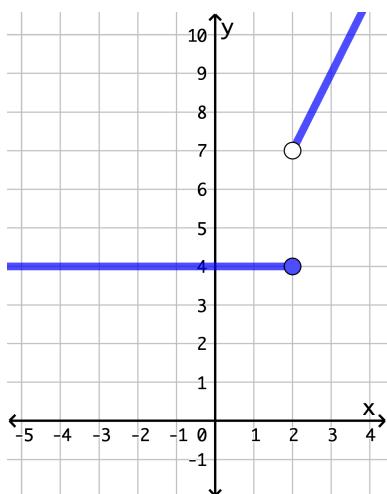
	Description	Limit Notation	Value
a.	left-hand limit:		$=$
b.	right-hand limit:		$=$
c.	two-sided limit:		$=$
d.	function value:		$=$

2) Evaluate each limit.

(A) $\lim\limits_{x \to 2} \dfrac{x^2 + 5x + 6}{x + 2} =$

(B) $\lim\limits_{x \to 6} \dfrac{x - 6}{x^2 - 4x - 12} =$

(C) $\lim\limits_{x \to 0} \dfrac{5x^4 + 8x^2}{3x^4 - 16x^2} =$

3) Evaluate each limit to infinity.

(A) $\lim\limits_{x \to \infty} \dfrac{2x^4 - x^3 + x^2 - 1}{2 - x} =$

(B) $\lim\limits_{x \to \infty} \dfrac{5(4x + 3)}{(x + 1)(x - 1)} =$

(C) $\lim\limits_{x \to \infty} \dfrac{3x^2 + 20x}{2x^4 + 3x^3 - 29} =$

4) Determine whether the function is continuous everywhere by testing the "suspect point". If discontinuous, state why.

$$f(x) = \begin{cases} x - 3 \text{ if } x \le 2 \\ 2x + 1 \text{ if } x > 2 \end{cases}$$

$$f(x) = \begin{cases} x + 7, & x < 2 \\ 9, & x = 2 \\ 3x + 3, & x > 2 \end{cases}$$

5) For what value(s) of k is the function $f(x) = \begin{cases} 3x^2 - 11x - 4, x \le 4 \\ kx^2 - 2x - 1, \ x > 4 \end{cases}$ continuous at $x = 4$?

6) Determine any points where the function is not differentiable.

A)

B)