AUTHOR 1 ———————————— □

AUTHOR 2 ———————————— □

AUTHOR 3 ———————————— □
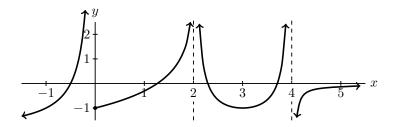
AUTHOR 4 ———————————— □

Worksheet 03

1. Suppose the graph of a function $h(x)$ is given below. Find the value of each of the following below.

(a) $\lim\limits_{x \to 0^-} h(x) =$

(b) $\lim\limits_{x \to 0^+} h(x) =$

(c) $\lim\limits_{x \to 0} h(x) =$

(d) $\lim\limits_{x \to 2^-} h(x) =$

(e) $\lim\limits_{x \to 2^+} h(x) =$

(f) $\lim\limits_{x \to 2} h(x) =$

(g) $\lim\limits_{x \to 4^-} h(x) =$

(h) $\lim\limits_{x \to 4^+} h(x) =$

(i) $\lim\limits_{x \to 4} h(x) =$

2. Let $f(x) = \dfrac{2x}{x-3}$.

(a) Find the following (by plugging in x-values closer and closer to 3). Explain your answers!

i. $\lim\limits_{x \to 3^-} f(x) =$

ii. $\lim\limits_{x \to 3^+} f(x) =$

iii. $\lim\limits_{x \to 3} f(x) =$

(b) Is the line $x = 3$ an asymptote of the graph $y = f(x)$. Why or why not?

3. Determine if the following statements are True or False. Make sure to explain!

(a) $\dfrac{x^2 - x - 6}{x - 3} = x + 2$

(b) $\lim\limits_{x \to 3} \left(\dfrac{x^2 - x - 6}{x - 3} \right) = \lim\limits_{x \to 3} (x + 2)$

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4. Compute the following limits without graphing.

(a) $\displaystyle\lim_{x \to -1} \frac{2x^2 + 3x + 1}{x^2 - 2x - 3}$

(b) $\displaystyle\lim_{x \to 3} \frac{\frac{1}{x} - \frac{1}{3}}{x - 3}$

(c) $\displaystyle\lim_{h \to 0} \frac{(-3 + h)^2 - 9}{h}$

5. Let $f(x) = \dfrac{x^2 - x - 6}{x^2 - 9}$. Find all vertical asymptotes of the curve $y = f(x)$ (without graphing).