

Sample from HW5

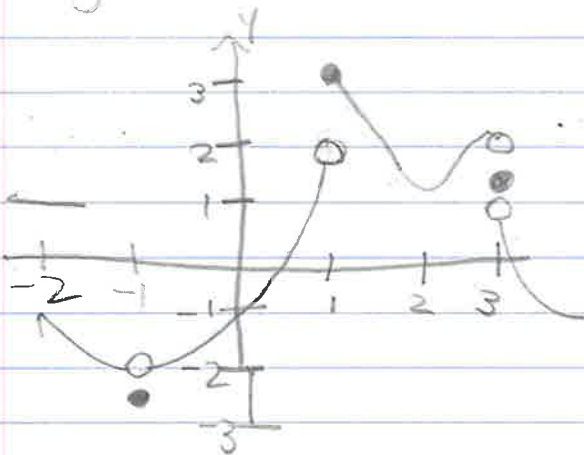
Math 10250
2 September 2018

Hwk #5

1.1 #1, 2, 4, 46, 49, 55, 56
1.2 #2, 3, 8, 12, 13

1.1

1) Refer to the function f , whose graph is shown in Figure 1.1.16



a) $\lim_{x \rightarrow -1} f(x)$

$$\lim_{x \rightarrow -1} f(x) = \boxed{-2} \text{ answer}$$

approach -1 on
x-axis from both
left and right

b) $\lim_{x \rightarrow 1^+} f(x)$

$$\lim_{x \rightarrow 1^+} f(x) = \boxed{3} \text{ answer}$$

approach 1 on x-axis
just from the right

FIVE STAR.
★★★★★

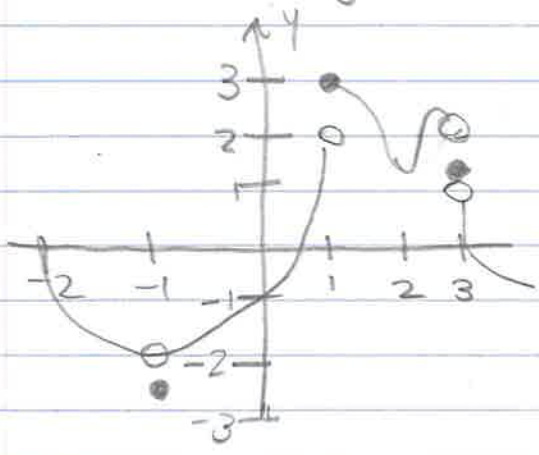
e) $\lim_{x \rightarrow 1^-} f(x)$

$\lim_{x \rightarrow 1^-} f(x) = \boxed{2}$ answer

approach 1 on x-axis from just the left

2 Refer to the function f, whose graph is shown in Figure 1.1.16

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a) $\lim_{x \rightarrow 3^-} f(x)$

$\lim_{x \rightarrow 3^-} f(x) = \boxed{2}$ answer

approach 3 from the left on x-axis

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b) $\lim_{x \rightarrow 3^+} f(x)$

$\lim_{x \rightarrow 3^+} f(x) = \boxed{1}$ answer

approach 3 from the right on x-axis

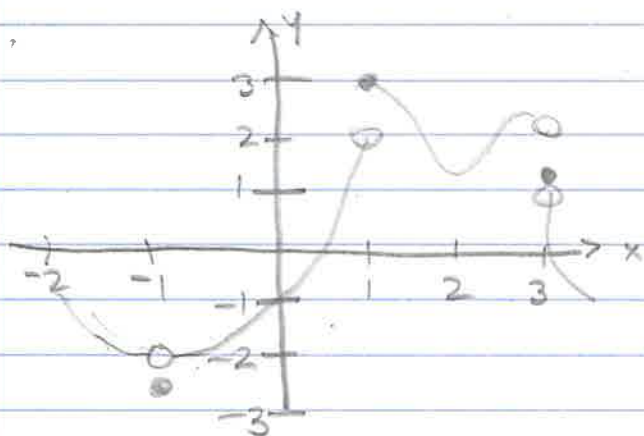
c) $\lim_{x \rightarrow 2} f(x)$

$\lim_{x \rightarrow 2} f(x) = \boxed{\frac{3}{2}}$ answer

approach 2 from both sides on x-axis

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4 Refer to the function f , whose graph is shown in Figure 1.1.16



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Find all x in the interval $(-2, 4)$ at which the function f has no limit. Explain.

answer and explanation

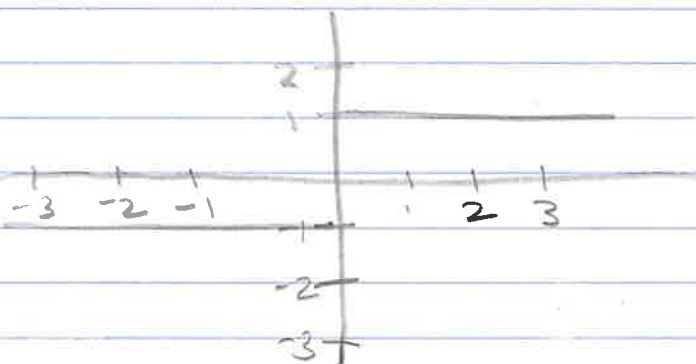
Out of all x in the interval $(-2, 4)$ two values have no limit within the function f . The two values of x are $x=1$ and $x=3$. This is because at point $x=1$ there are two different values as you approach from the left and right. This idea also applies to the value $x=3$.

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4/6 Find the one-sided limit, if it exists

$$\lim_{x \rightarrow 0^+} \frac{|x|}{x}$$



use graph to help determine right-handed limit

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$$\lim_{x \rightarrow 0^+} \frac{|x|}{x} = \boxed{1} \text{ answer}$$

49 $\lim_{x \rightarrow 2^+} \frac{x^2 - 4}{\sqrt{x-2}} =$

$$\lim_{x \rightarrow 2^+} \frac{(x-2)(x+2)}{\sqrt{x-2}} = \text{expand}$$

$$\lim_{x \rightarrow 2^+} \frac{(x-2)(x+2)}{(x-2)^{1/2}} = \text{simplify}$$

$$\lim_{x \rightarrow 2^+} \sqrt{x-2} (x+2) = \text{condense}$$

$$\lim_{x \rightarrow 2^+} \sqrt{x-2} (x+2) = \boxed{0} \text{ answer}$$

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55 Assume that $\lim_{x \rightarrow 0^+} f(x) = 1/2$ and $\lim_{x \rightarrow 0^+} g(x) = -1/3$

and find the given limit

$$\lim_{x \rightarrow 0^+} [f(x) - g(x)] = \text{insert values for each function}$$

$$\lim_{x \rightarrow 0^+} [1/2 - (-1/3)] = 5/6 \text{ condense}$$

$$\lim_{x \rightarrow 0^+} [f(x) - g(x)] = \boxed{5/6} \text{ answer}$$

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