Solutions 4:30

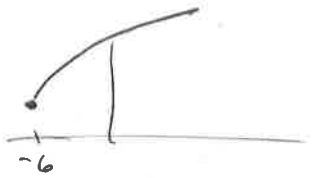
Math 113: Quiz 1

Instructions: Answer all questions. Show all of your work. Partial credit may be given. The use of calculators is not allowed. Please turn off and put away all mobile electronic devices - accessing these devices between the time you receive your quiz and the time you turn in your quiz constitutes an honor code violation.

1. (*4 pts*) State the domain and range of the function

$$f(x) = 1 + \sqrt{x+6}$$

D: $x + 6 \geq 0$ $\boxed{x \geq -6}$



R: $[1, \infty)$

2. (*2 pts*) Evaluate the following limit (your answer should include at least a brief justification)

$$\lim_{x \to 2} \frac{x^2 - 4}{x + 2} = \frac{4-4}{2+2} = \frac{0}{4} = 0$$

by limit law for rational functions b/c $g(2) \neq 0$.

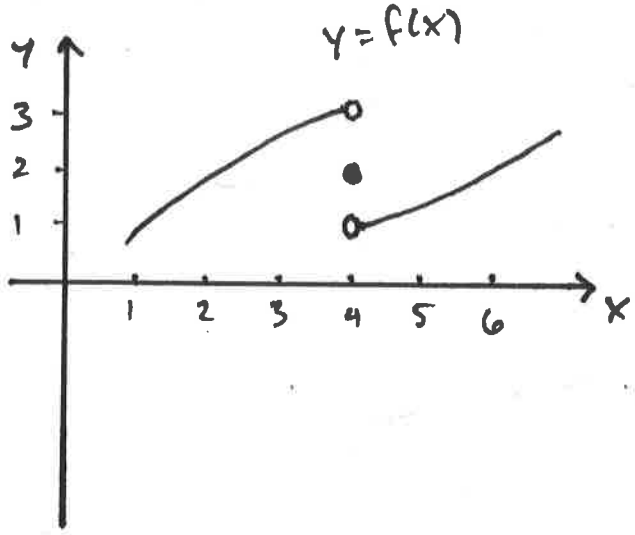
3. (*2 pts*) Evaluate the following limit (your answer should include at least a brief justification)

$$\lim_{x \to 1^+} \frac{1}{x - 1} = +\infty$$

x	$\frac{1}{x-1}$
1.01	$1/0.01 = 100$
1.001	$1/0.001 = 1000$

$\to +\infty$

4. (*2 pts*) Find the following limits of the function shown in the sketch



(a) $\lim_{x \to 4^+} f(x) =$ 1

(b) $\lim_{x \to 4^-} f(x) =$ 3.