Each problem is worth 5 points. Show complete justification for full credit.

1. Given the graph shown for f(x):

(a) What is $\lim\limits_{x \to 2^-} f(x)$? $= \underline{-1}$
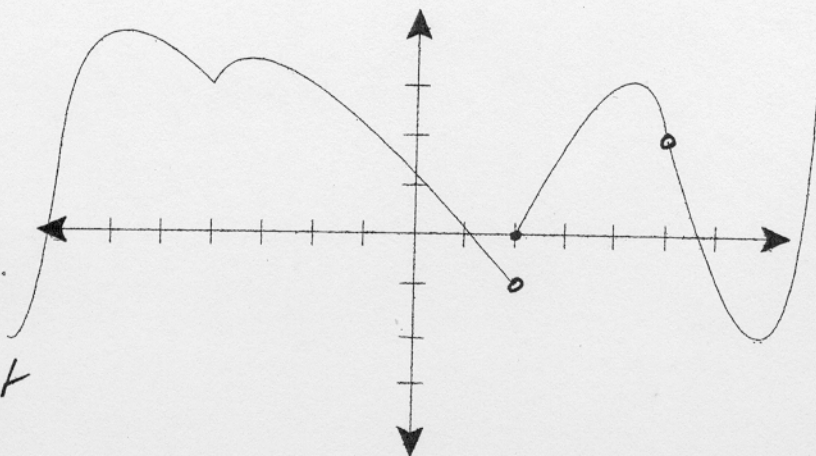
5

+1

(b) What is $\lim\limits_{x \to 2^+} f(x)$? $= \underline{0}$

(c) What is $\lim\limits_{x \to 2} f(x)$?

$\underline{DNE}$, because left + right limits do not agree.

(d) What is $f(2)$? $= \underline{0}$

(e) What is $f(5)$?

$\underline{DNE}$

Excellent

2. Find $\lim\limits_{x \to 0} \dfrac{(x-5)^2 - 25}{x}$. $= \lim\limits_{x \to 0} \dfrac{(x-5)(x-5) - 25}{x}$

5

$= \lim\limits_{x \to 0} \dfrac{x^2 - 10x + 25 - 25}{x}$

$= \lim\limits_{x \to 0} \dfrac{x^2 - 10x}{x}$

$= \lim\limits_{x \to 0} \dfrac{x(x-10)}{x}$

$= 1 \left[\lim\limits_{x \to 0} x - 10 \right] = 1(-10) = \underline{-10}$

Very nice