Directions: Closed book, closed notes, no calculators.   Each problem is 10 points, for a total of 20 points.

By submitting this quiz you affirm that you agree with this statement: *On my honor, I have neither given nor received unauthorized aid on this assignment, and I pledge that I am in compliance with the VCU Honor System.*

1. Answer the questions about the function graphed below.   (Short answer; no need to show work.)
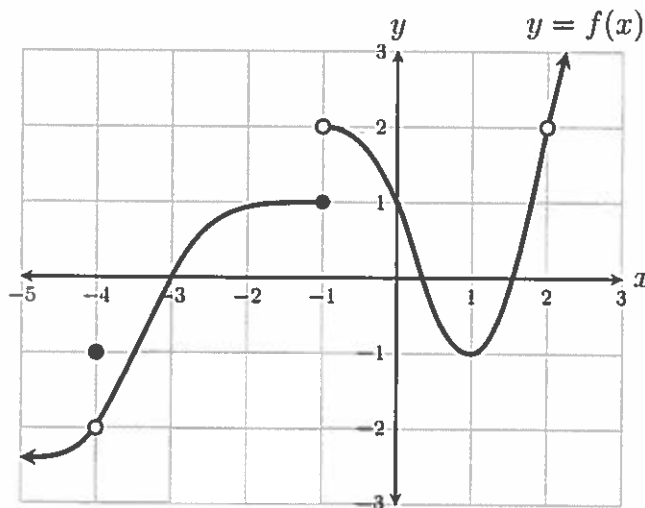
     (a) $f(-4) = \boxed{-1}$

     (b) $\lim\limits_{x \to -4} f(x) = \boxed{-2}$

     (c) $\lim\limits_{x \to -1^+} f(x) = \boxed{2}$

     (d) $\lim\limits_{x \to -1^-} f(x) = \boxed{1}$

     (e) $\lim\limits_{x \to 2} \dfrac{5f(x)}{\sqrt{f(x)+7}} = \dfrac{5 \cdot 2}{\sqrt{2+7}} = \dfrac{10}{\sqrt{9}}$

$$= \boxed{\dfrac{10}{3}}$$

$y = f(x)$ graph

2. Find: $\lim\limits_{x \to 5} \dfrac{1 - \dfrac{25}{x^2}}{x - 5}$ (You must show work to receive credit.)

$$= \lim_{x \to 5} \frac{1 - \dfrac{25}{x^2}}{x - 5} \cdot \frac{x^2}{x^2}$$

$$= \lim_{x \to 5} \frac{x^2 - 25}{(x-5)x^2}$$

$$= \lim_{x \to 5} \frac{(x-5)(x+5)}{(x-5)x^2}$$

$$= \lim_{x \to 5} \frac{x+5}{x^2} = \frac{5+5}{5^2} = \frac{10}{25} = \boxed{\frac{2}{5}}$$