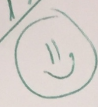


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1. Estimate the given limit using a numerical approximation (15 pts)

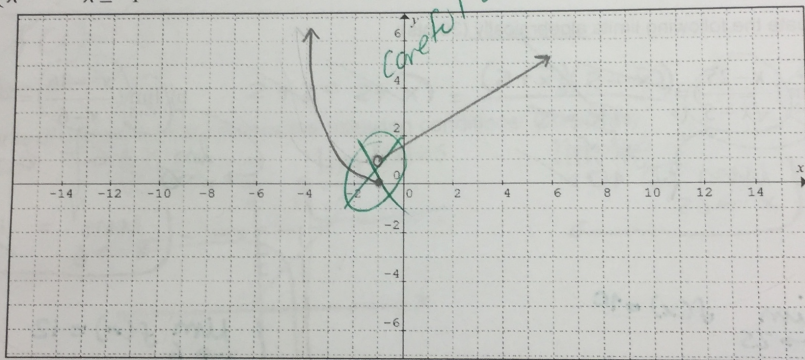
$$\lim_{x \rightarrow 0} \frac{\sqrt{x+1}-1}{x}$$

x	-0.1	-0.01	-0.001	0	0.001	0.01	0.1
f(x)	0.51316	0.50125	0.500125		0.49987	0.4987	0.48808

$\lim_{x \rightarrow 0} = 0.50$        $\lim_{x \rightarrow 0} f(x) = 0.50$

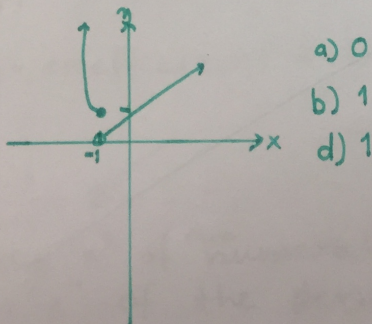
2. Graph the following functions and find their limits.

$$f(x) = \begin{cases} x+1 & x > -1 \circ \\ x^2 & x \leq -1 \bullet \end{cases} \quad (15 \text{ pts})$$

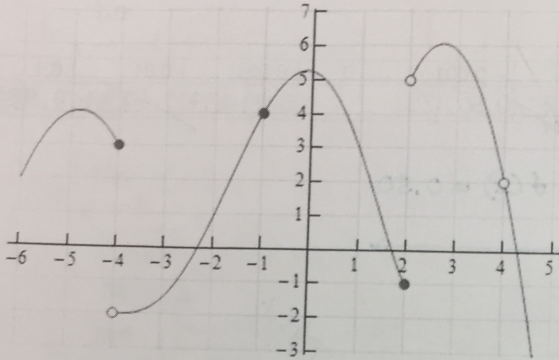


Find (20 pts)

- a)  $\lim_{x \rightarrow -1^+} f(x)$  ~~1~~ 0 (ok according to your graph.)  
 b)  $\lim_{x \rightarrow -1^-} f(x)$  ~~1~~  
 c)  $\lim_{x \rightarrow -1} f(x)$  ~~#~~  
 d)  $f(-1)$  ~~1~~



3. Based on the graph find the limits (20 pts)



a)  $\lim_{x \rightarrow 4^+} f(x) = -2$     b)  $\lim_{x \rightarrow 2^-} f(x) = -1$   
 c)  $\lim_{x \rightarrow 4} f(x) = 2$     d)  $f(4) = 2$

4. Evaluate the following limits algebraically (30 pts):

-2 Notation  
 a)  $\lim_{x \rightarrow 25} \left( \frac{x-25}{\sqrt{x}-5} \right) = \frac{(x-5)(x+5)}{\sqrt{x}-5} = (x+5) = 5+5 = 10$   
 $\lim_{x \rightarrow 25} f(x) = 10$

b)  $\lim_{x \rightarrow 6} \left( \frac{x^2-36}{x-6} \right) = \frac{(x-6)(x+6)}{x-6} = x+6 = 6+6 = 12$   
 $\lim_{x \rightarrow 6} f(x) = 12$