Lesson 5C: Limit Practice (& Some Hard Examples)

LIMITS: Summary Table: To Evaluate Limits

A) Use substitution where possible.

B) For piecewise functions, _____

C) For the $\frac{0}{0}$ case, try _____, _____, _____, _____.

D) For Sequences and Series try numerical approaches or algebraic techniques

1. Given the function $f(x)=\begin{cases}3-x, x<2\\ x^2-3, x>2\end{cases}$, determine $\lim_{x\to 2} f(x)$.

2. Evaluate the following limits.

a) $\lim_{x\to 9}\dfrac{\frac{1}{\sqrt{x}}-\frac{1}{3}}{x-9}$

b) $\lim_{x\to 3}\dfrac{\sqrt{2x+1}-\sqrt{7}}{6x-2x^2}$

c) $\lim_{x\to 1^+}\dfrac{x+1}{(1-x)(1+x)}$

d) $\lim_{x\to 1^+}\dfrac{x-1}{(1-x)(1+x)}$

e) $\lim_{x\to 1^-}\dfrac{x+1}{(1-x)(1+x)}$

f) $\lim_{x\to 3^+}\dfrac{x|x-3|}{x-3}$

g) $\lim_{x\to 3}\dfrac{x|x-3|}{x-3}$

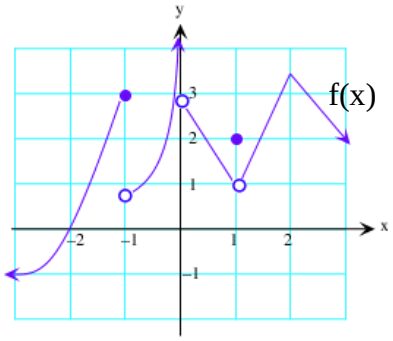
3. Evaluate $\lim_{x\to 8^-}\sqrt{x+8}$ A) 0 B) $\sqrt{8}$ C) Does not exist D) 4

4. Evaluate $\lim_{x\to 0} 2\sqrt{x}$ A) 0 B) 2 C) Does not exist D) $\sqrt{2}$

5. a) List the x-value(s) where f(x) has no limit. _____

b) List the x-values where f(x) is not continuous. _____

c) Classify each discontinuity.



f(x)