Practice Quiz 1

$$f(x) = \begin{cases} 2x-6, & x<0 \\ x-4, & x \geq 0 \end{cases}$$

$\lim_{x \to 0^-} f(x)$ $2(0)-6 = -6$

$\lim_{x \to 0^+} f(x)$ $0-4 = -4$

$f(0) = -4$

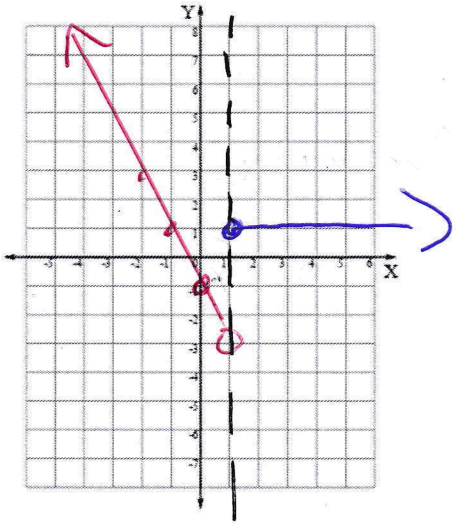
Is $f(x)$ continuous @ $x=0$? no Jump discontinuity

make a sketch of $f(x)$

$$f(x) = \begin{cases} -2x-1 & \text{on } (-\infty, 1) \\ 1 & \text{on } [1, \infty) \end{cases}$$

What type of discontinuity does $f(x)$ have @ $x = 0$?

Jump discontinuity



Evaluate

See next Page (Sorry)

$\lim_{x\to -3} |2x-4|$ $\quad |2(-3)-4| \quad |-10| = 10$

Evaluate the limit of the function displayed in the table below $\rightarrow$ if $f(x) = \dfrac{x-4}{(x-4)(x+1)}$

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X	3.9	3.99	3.999	4	4.001	4.01	4.1
F(x)	0.20408	0.20040	0.20004	Error	0.19996	0.19960	0.19608

0.2

Find the x values where the function is discontinuous, if any, and describe the type of discontinuity

$f(x) = \dfrac{3}{3-x}$ @ $x=3$ infinite disc.

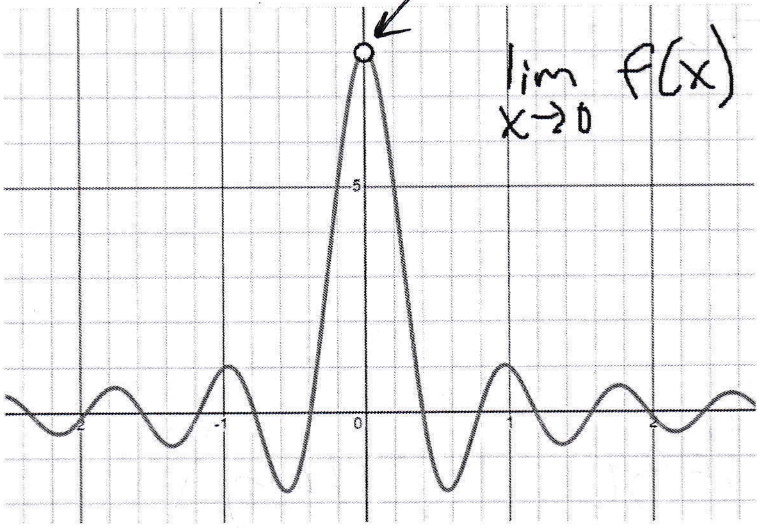
$g(x) = \sqrt[3]{x-1}$ Continous for all x

$f(x) = \dfrac{(3x-1)(x+2)}{x+2}$ $x=-2$ Removable dist.

Find the limit of the function, if it exists, in the graph displayed below

fill in the hole

$\lim_{x\to 0} f(x) = 8$



Write an extended piece-wise defined function so this function becomes continuous.

$$f(x) = \frac{(2x+1)(3x-5)}{2x+1}$$

$x = -\frac{1}{2}$ is where the discontinuity occurs, It's removable $(2x+1)$ is in both numerator and denominator so there is a Hole

$$\lim_{x \to -\frac{1}{2}} 3x-5 = \frac{3}{1}\left(-\frac{1}{2}\right) - 5$$

$$-1.5 - 5 = -6.5$$

$$F(x) = \begin{cases} \frac{(2x+1)(3x-5)}{2x+1} & x \neq -\frac{1}{2} \\ -6.5 & x = -\frac{1}{2} \end{cases}$$

The Table limit add on

$$f(x) = \frac{x-4}{(x-4)(x+1)}$$ Removable discontinuity @ $x=4$

$$\lim_{x \to 4} \frac{1}{x+1} = \frac{1}{4+1} = \frac{1}{5} \text{ or } 0.2$$

$$\frac{1}{x} = \frac{1}{5}$$