3. (10 pts) (a) State the formal definition of "the function f is continuous at the point $x = a$":

f is cont. at $x = a$ if $\lim_{x \to a} f(x) = f(a)$

(b) Using the definition, state why the function defined by $f(x) = \begin{cases} \frac{x^2+5x-6}{1-x} & if \quad x \neq 1 \\ -7 & if \quad x = 1 \end{cases}$ is continuous at $x = 1$.

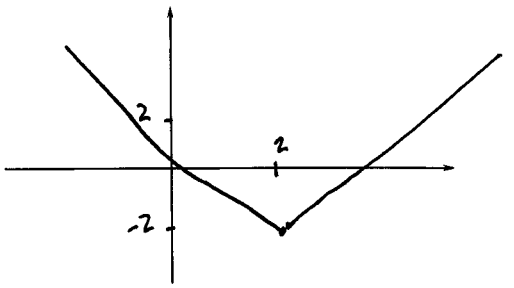
observe: $\lim_{x \to 1} f(x) = \lim_{x \to 1} \left[\frac{x^2+5x-6}{1-x} \right] = \lim_{x \to 1} \left[\frac{(x-1)(x+6)}{1-x} \right]$

$= \lim_{x \to 1} [-x-6] = -7 = f(1)$

so f is cont. at $x = 1$

4. (10 pts)
(a) Sketch the graph of $f(x) = |x - 2| - 2$. sketch below.

(b) Determine if $f(x)$ differentiable at every point and explain your reasoning.



no - the left hand limits and right hand limits of $\frac{f(2+h) - f(2)}{h}$ don't agree