

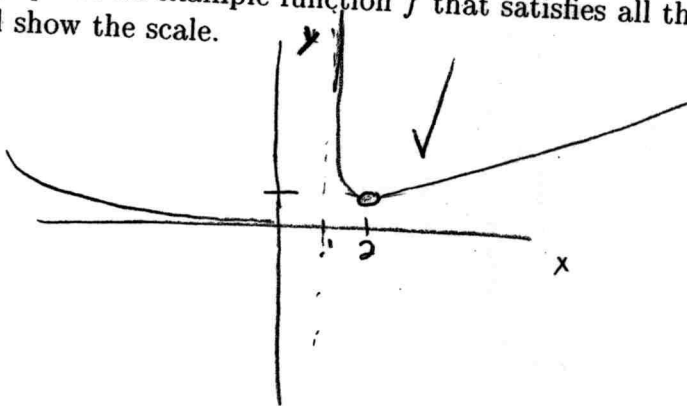
3. Consider a function f with the following limits:

20 pts
20

$$\lim_{x \rightarrow 2^-} f(x) = 1, \quad \lim_{x \rightarrow 1^+} f(x) = \infty, \quad \lim_{x \rightarrow 0^-} f(x) = 0$$

$$\lim_{x \rightarrow 2^+} f(x) = 1, \quad f(2) \text{ is undefined.}$$

(a) Sketch the graph of an example function f that satisfies all the given conditions. Label the axes and show the scale.



(b) Circle one answer: At $x = 2$, the function is

- i. continuous.
- ii. right-continuous.
- iii. left-continuous.
- ✓ iv. neither left- nor right-continuous.

4. Consider the following functions:

$$f_1(x) = \frac{(x+4)(x-3)}{x-3}, \quad f_2(x) = x+4.$$

3 pts
3

(a) Briefly explain what is wrong with the equation $f_1(x) = f_2(x)$.

It should be except when $x=3$ ✓

(b) In view of Problem (4a), briefly explain why $\lim_{x \rightarrow 3} f_1(x) = \lim_{x \rightarrow 3} f_2(x)$.

In $\frac{x^2+x-12}{x-3}$ the limit exist from the right and left and they approach the same value therefore the limit exists at $x=3$ it just isn't defined at $x=3$. ✓

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