Use algebra and the properties of limits as needed to find the given limit. If the limit does not exist, say so.

$$\frac{0}{0} \quad \lim_{x\to 17}\left[\frac{x^2+3x-340}{x^2-289} = \frac{(x+20)\cancel{(x-17)}}{(x+17)\cancel{(x-17)}} = \frac{x+20}{x+17}\right] = \frac{37}{34}$$

indeterminant form

rk: HW 1.2

11 12 13 14 15 16 17

x. Score: 0 of 1 pt

Is the function g(x) continuous at x = 4? No

$$g(x) = \begin{cases} \frac{1}{4}x + 8, & \text{for } x \le 4 \\ 5x - 8, & \text{for } x > 4 \end{cases}$$

$$\lim_{x\to 4^-}\left[g(x) = \frac{1}{4}x + 8\right] = 9$$

$$\neq$$

$$\lim_{x\to 4^+}\left[g(x) = 5x - 8\right] = 12$$

x = 4 is a pt. of discontinuity

rk: HW 1.2

11 12 13 14 15 16 17

x. Score: 0 of 1 pt

What would we have to replace 8 with so g(x) is continuous?

$$g(x) = \begin{cases} \frac{1}{4}x + 8, & \text{for } x \le 4 \\ 5x - 8, & \text{for } x > 4 \end{cases}$$

$$g(x) = \begin{cases} \frac{1}{4}x + c, & x \le 4 \\ 5x - c, & x > 4 \end{cases}$$

let $x = 4$ then solve

$$\frac{1}{4}(4) + c = 5(4) - c$$

$$\begin{aligned} 1 + c &= 20 - c \\ +c &\qquad\; +c \end{aligned}$$

$$1 + 2c = 20$$

$$2c = 19 \Rightarrow c = \frac{19}{2} = 9.5$$