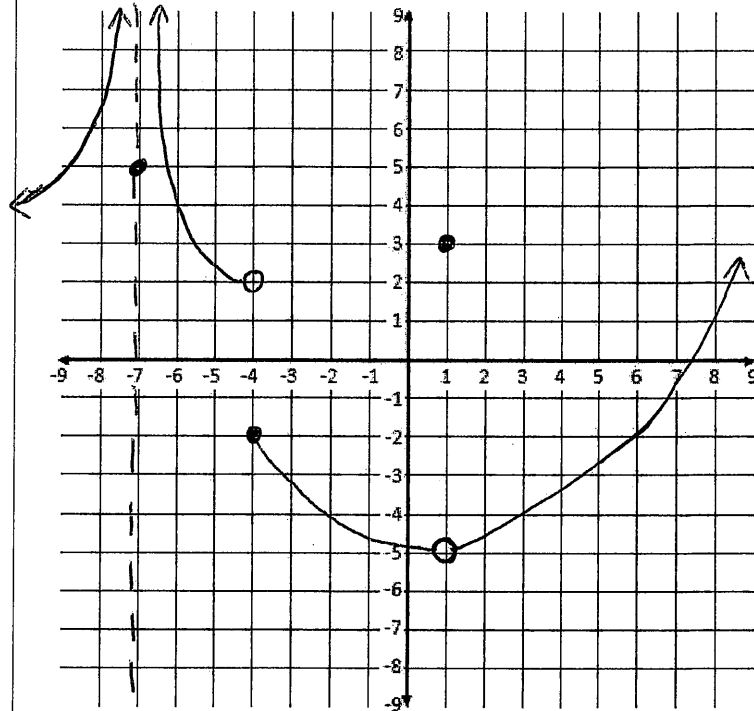


Ch. 1.2-1.3 Limits Quiz Review Worksheet

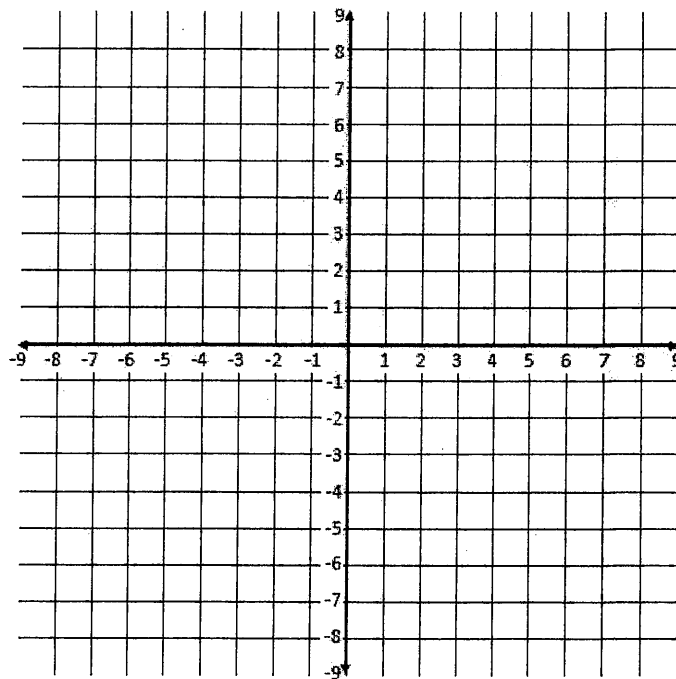
1) Find the values

- a. $\lim_{x \rightarrow -7} g(x) =$
- b. $g(-7) =$
- c. $\lim_{x \rightarrow -4} g(x) =$
- d. $g(-4) =$
- e. $\lim_{x \rightarrow 1} g(x) =$
- f. $g(1) =$
- g. $g(6) =$
- h. $\lim_{x \rightarrow 6} g(x) =$



2) Sketch a graph with the following characteristics:

- a) $\lim_{x \rightarrow -5} f(x) = -3$
- b) $g(-5) = \text{undefined}$
- c) $g(-2) = -1$
- d) $\lim_{x \rightarrow -2} f(x) = -\infty$
- e) $g(2) = 3$
- f) $\lim_{x \rightarrow 2} f(x) = 3$
- g) $g(6) = 7$
- h) $\lim_{x \rightarrow 6} f(x) \text{ does not exist}$



Evaluate the Limit:

3)

$$\lim_{x \rightarrow 0} \frac{\frac{1}{x+5} - \frac{1}{5}}{x}$$

4)

$$\lim_{x \rightarrow 1} \frac{x^2 - x - 2}{x - 1}$$

5)

$$\lim_{x \rightarrow 2} \frac{4 - \sqrt{18 - x}}{x - 2}$$

6)

$$\lim_{x \rightarrow 1} \frac{3x^2 - x - 2}{x - 2}$$

7)

$$\lim_{x \rightarrow 5} \frac{4x^2 - 22x + 10}{x - 5}$$

8)

$$\lim_{x \rightarrow 0} \frac{\sqrt{3+x} - \sqrt{3}}{x}$$

9)

$$\lim_{x \rightarrow 0} \frac{\frac{1}{4-x} - \frac{1}{4}}{x}$$

10)

$$\lim_{x \rightarrow 1} \frac{\frac{3}{x} - 3}{x - 1}$$

Key

1) Find the values

a. $\lim_{x \rightarrow -7} g(x) = \text{DNE}$ DNE

b. $g(-7) = 5$

c. $\lim_{x \rightarrow -4} g(x) = \text{DNE}$

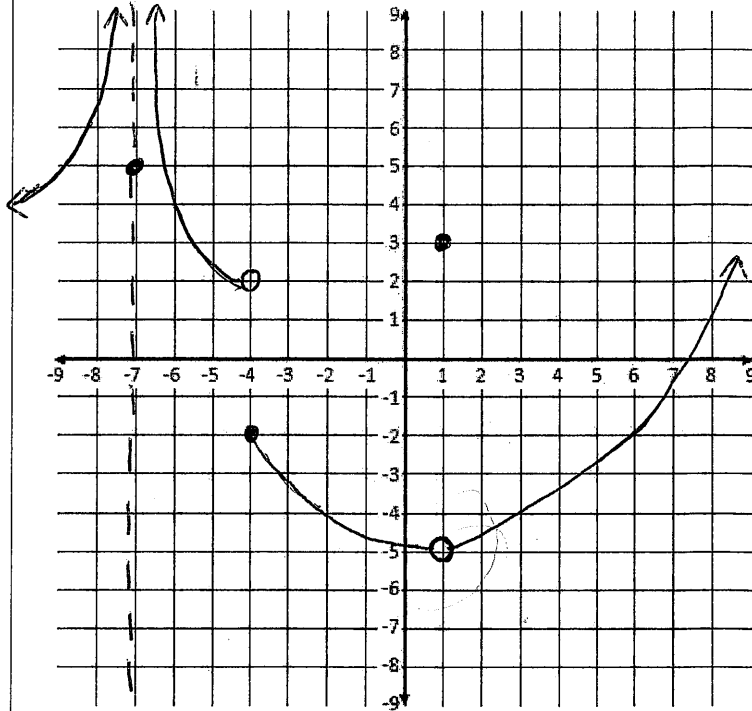
d. $g(-4) = -2$

e. $\lim_{x \rightarrow 1} g(x) = -5$

f. $g(1) = 3$

g. $g(6) = -2$

h. $\lim_{x \rightarrow 6} g(x) = -2$



2) Sketch a graph with the following characteristics:

a) $\lim_{x \rightarrow -5} f(x) = -3$

b) $g(-5) = \text{undefined}$

c) $g(-2) = -1$

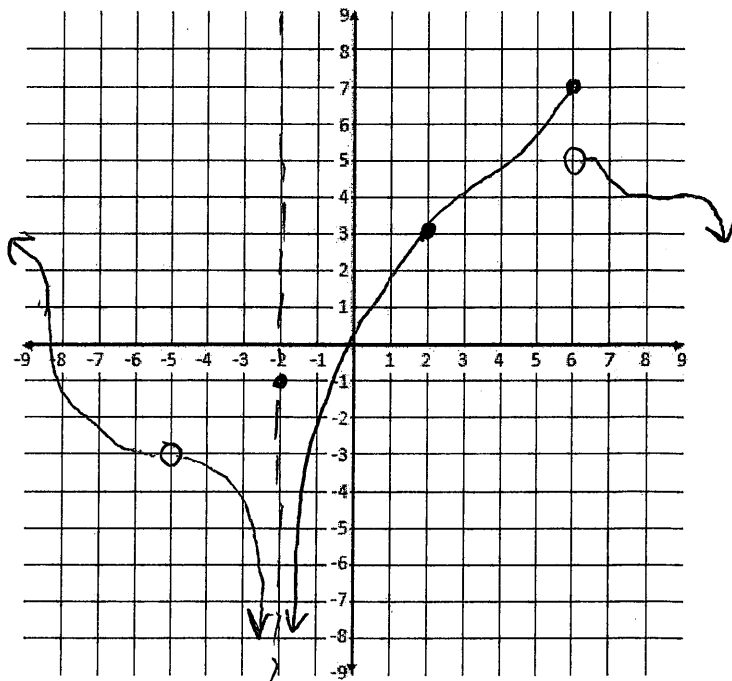
d) $\lim_{x \rightarrow -2} f(x) = -\infty$

e) $g(2) = 3$

f) $\lim_{x \rightarrow 2} f(x) = 3$

g) $g(6) = 7$

h) $\lim_{x \rightarrow 6} f(x)$ does not exist



Evaluate the Limit:

3)

$$\lim_{x \rightarrow 0} \frac{1}{x+5} - \frac{1}{5} \cdot 5(x+5)$$

$$\lim_{x \rightarrow 0} \frac{5 - (x+5)}{5x(x+5)} = \frac{5-x-5}{5x(x+5)}$$

$$\lim_{x \rightarrow 0} \frac{-1x}{5x(x+5)} = \frac{-1}{5(0+5)} = \boxed{\frac{-1}{25}}$$

5)

$$\lim_{x \rightarrow 2} \frac{4 - \sqrt{18-x}}{x-2} \cdot \frac{4 + \sqrt{18-x}}{4 + \sqrt{18-x}}$$

$$\lim_{x \rightarrow 2} \frac{16 - (18-x)}{(x-2)(4 + \sqrt{18-x})} \rightarrow \boxed{\frac{1}{8}}$$

$$\lim_{x \rightarrow 2} \frac{-2+x}{(x-2)(4 + \sqrt{18-x})} = \frac{1}{4 + \sqrt{18-2}} =$$

7)

$$\lim_{x \rightarrow 5} \frac{4x^2 - 22x + 10}{x-5} \rightarrow \frac{0}{0}$$

$\begin{array}{r} a \cdot c \\ 4 \quad -20 \\ -2 \quad 4 \\ \hline 4 \quad -20 \\ -2 \quad 4 \\ \hline 4 \quad -20 \\ -2 \quad 4 \end{array}$

$$\lim_{x \rightarrow 5} \frac{(2x-1)(x-5)}{(x-5)} = \boxed{9}$$

$\begin{array}{r} 1 \cdot 40 \\ 2, 20 \end{array}$

9)

$$\lim_{x \rightarrow 0} \frac{1}{4-x} - \frac{1}{4} \cdot (4-x)(4)$$

$$\lim_{x \rightarrow 0} \frac{4 - (4-x)}{x(4)(4-x)}$$

$$\lim_{x \rightarrow 0} \frac{4-4+x}{4x(4-x)} = \lim_{x \rightarrow 0} \frac{x}{4x(4-x)} = \frac{1}{4(4-0)} = \boxed{\frac{1}{16}}$$

4)

$$\lim_{x \rightarrow 1} \frac{x^2 - x - 2}{x-1} \quad \frac{1-1-2}{1-1} = \frac{-2}{0}$$

Limit Does Not Exist / DNE

6)

$$\lim_{x \rightarrow 1} \frac{3x^2 - x - 2}{x-2} = \frac{3-1-2}{1-2} = \frac{0}{-1} = \boxed{0}$$

8)

$$\lim_{x \rightarrow 0} \frac{\sqrt{3+x} - \sqrt{3}}{x} \cdot \frac{\sqrt{3+x} + \sqrt{3}}{\sqrt{3+x} + \sqrt{3}}$$

$$\lim_{x \rightarrow 0} \frac{3+x-3}{x(\sqrt{3+x} + \sqrt{3})} = \lim_{x \rightarrow 0} \frac{x}{x(\sqrt{3+x} + \sqrt{3})} = \frac{1}{\sqrt{3} + \sqrt{3}} = \boxed{\frac{1}{2\sqrt{3}}}$$

10)

$$\lim_{x \rightarrow 1} \frac{\frac{3}{x} - 3}{x-1} \cdot x$$

$$\lim_{x \rightarrow 1} \frac{3-3x}{x(x-1)}$$

$$\lim_{x \rightarrow 1} \frac{3(1-x)^{-1}}{x(x-1)} = \frac{-3}{1} = \boxed{-3}$$