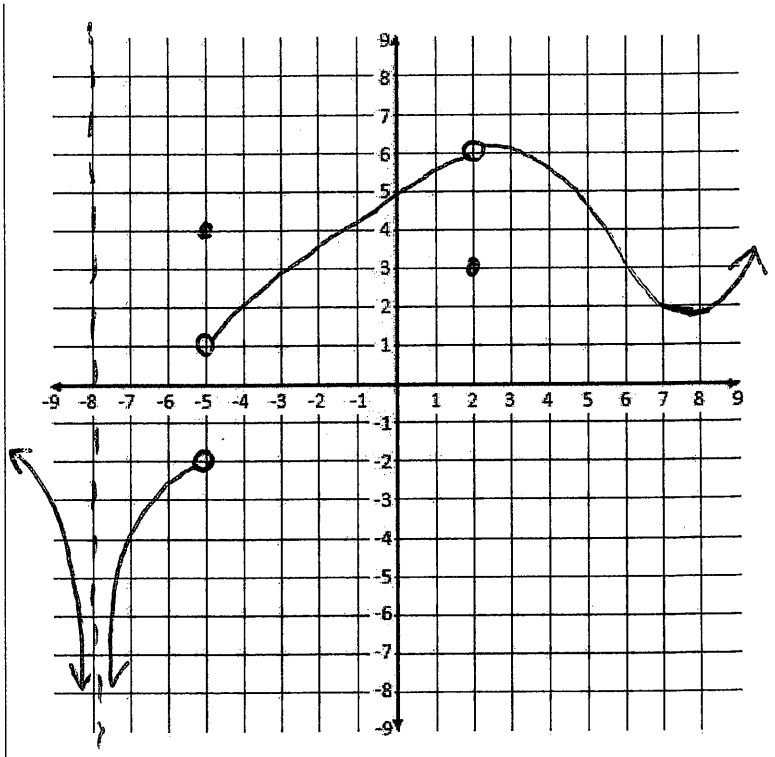
Ch. 1.2-1.3 Limits Quiz Review Worksheet #2

1) Find the values



a. $\lim_{x\to -8} g(x) =$

b. $g(-8) =$

c. $\lim_{x\to -5} g(x) =$

d. $g(-5) =$

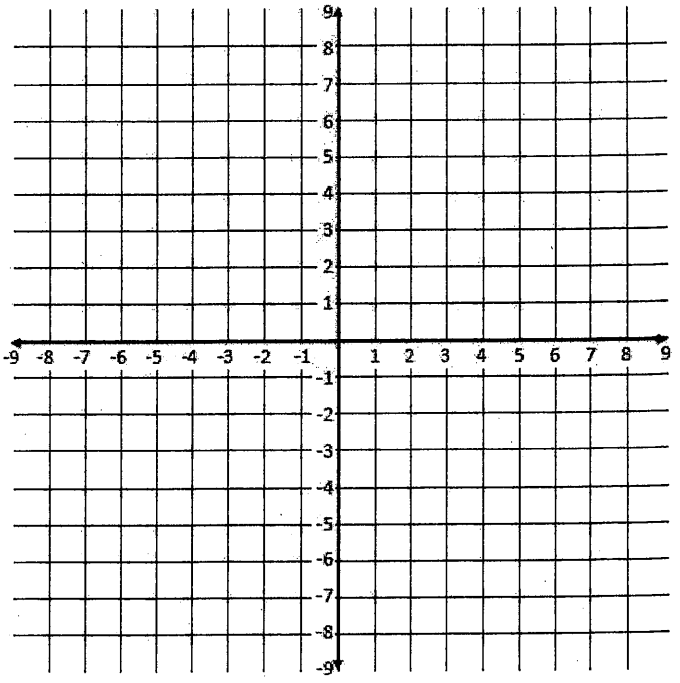
e. $\lim_{x\to 2} g(x) =$

f. $g(2) =$

g. $g(7) =$

h. $\lim_{x\to 7} g(x) =$

2) Sketch a graph with the following characteristics:



a) $\lim_{x\to -5} f(x) = -4$

b) $g(-5) = undefined$

c) $g(-2) = -8$

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

e) $g(2) = 7$

f) $\lim_{x\to 2} f(x) = does\ not\ exist$

g) $g(5) = 1$

h) $\lim_{x\to 5} f(x) = -3$

i) $g(7) = -3$

j) $\lim_{x\to 7} f(x) = -3$

Evaluate the Limit:

3)

$$\lim_{x\to 0}\frac{\frac{1}{x+6}-\frac{1}{6}}{x}$$

4)

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

5)

$$\lim_{x\to 5}\frac{4-\sqrt{11+x}}{x-5}$$

6)

$$\lim_{x\to 1}\frac{4x^2-x-2}{x-3}$$

7)

$$\lim_{x\to 3}\frac{6x^2-15x-9}{x-3}$$

8)

$$\lim_{x\to 0}\frac{\sqrt{5+x}-\sqrt{5}}{x}$$

9)

$$\lim_{x\to 0}\frac{\frac{1}{2-x}-\frac{1}{2}}{x}$$

10)

$$\lim_{x\to 2}\frac{\frac{2}{x}-1}{x-2}$$

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Key

1) Find the values

a. $\lim_{x\to -8} g(x) =$ DNE $(-\infty)$

b. g(−8) = undefined

c. $\lim_{x\to -5} g(x) =$ DNE

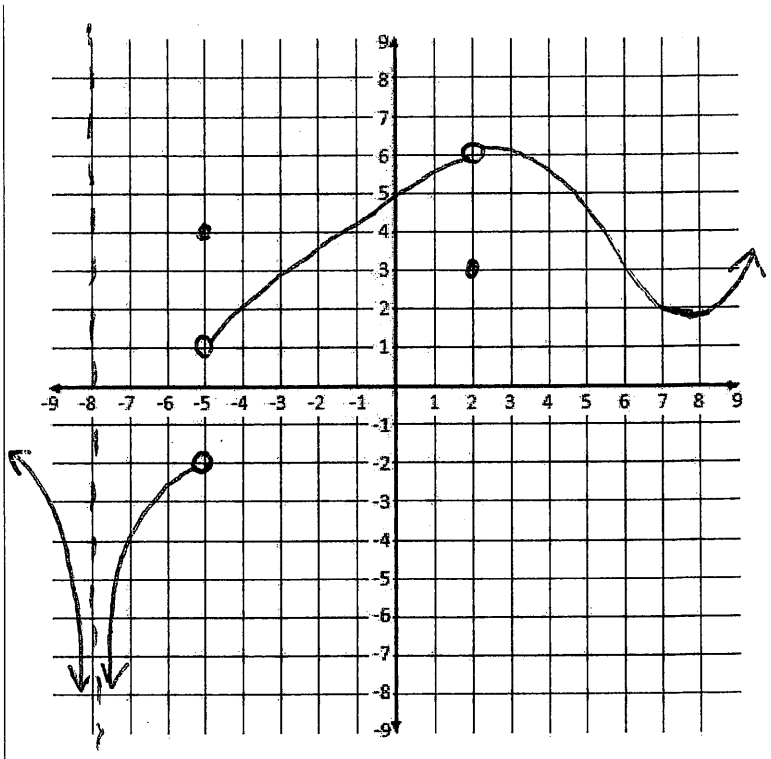
d. g(-5) = 4

e. $\lim_{x\to 2} g(x) =$ 6

f. g(2) = 3

g. g(7) = 2

h. $\lim_{x\to 7} g(x) =$ 2



2) Sketch a graph with the following characteristics:

a) $\lim_{x\to -5} f(x) = -4$

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c) $g(-2) = -8$

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

e) $g(2) = 7$

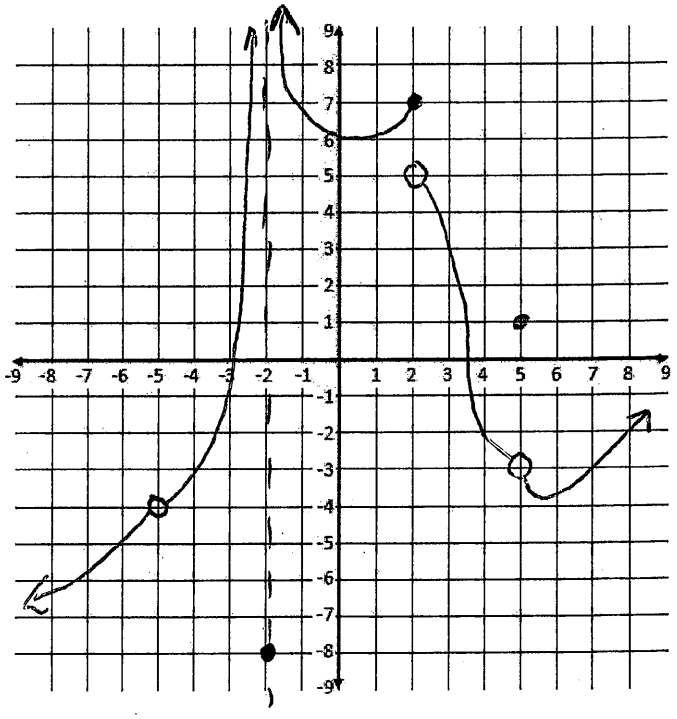
f) $\lim_{x\to 2} f(x) =$ *does not exist*

g) $g(5) = 1$

h) $\lim_{x\to 5} f(x) = -3$

i) $g(7) = -3$

j) $\lim_{x\to 7} f(x) = -3$



Evaluate the Limit:

3) $\lim_{x\to 0} \dfrac{\frac{1}{x+6}-\frac{1}{6}}{x}$ $\frac{0}{0}$ $\dfrac{6(x+6)}{1}$

$\lim_{x\to 0} \dfrac{6-(x+6)}{6x(x+6)} = \lim_{x\to 0} \dfrac{6-x-6}{6x(x+6)} = \dfrac{-1}{6(x+6)}$

$= \boxed{\dfrac{-1}{36}}$

4) $\lim_{x\to 1} \dfrac{2x^2+2x-3}{x-1} = \dfrac{2+2-3}{1-1} = \dfrac{1}{0}$

DNE

5) $\frac{0}{0}$ $\lim_{x\to 5} \dfrac{4-\sqrt{11+x}}{x-5} \cdot \dfrac{(4+\sqrt{11+x})}{(4+\sqrt{11+x})}$

$\lim_{x\to 5} \dfrac{16-(11+x)}{(x-5)(4+\sqrt{11+x})}$

$\lim_{x\to 5} \dfrac{5-x(-1)}{(x-5)(4+\sqrt{11+x})} = \dfrac{-1}{4+\sqrt{16}} = \boxed{\dfrac{-1}{8}}$

6) $\lim_{x\to 1} \dfrac{4x^2-x-2}{x-3} = \dfrac{4-1-2}{1-3} = \boxed{\dfrac{1}{-2}}$

7) $\frac{0}{0}$ $\lim_{x\to 3} \dfrac{6x^2-15x-9}{x-3} = \dfrac{3(2x^2-5x-3)}{x-3}$

$\lim_{x\to 3} \dfrac{3(2x+1)(x-3)}{(x-3)} = \boxed{21}$

8) $\frac{0}{0}$ $\lim_{x\to 0} \dfrac{\sqrt{5+x}-\sqrt{5}}{x} \cdot \dfrac{\sqrt{5+x}+\sqrt{5}}{\sqrt{5+x}+\sqrt{5}}$

$\lim_{x\to 0} \dfrac{5+x-5}{x(\sqrt{5+x}+\sqrt{5})} = \dfrac{1}{\sqrt{5}+\sqrt{5}}$

$= \boxed{\dfrac{1}{2\sqrt{5}}}$

9) $\frac{0}{0}$ $\lim_{x\to 0} \dfrac{\frac{1}{2-x}-\frac{1}{2}}{x}$ $2(2-x)$

$\dfrac{2-(2-x)}{2x(2-x)} = \dfrac{2-2+x}{(2x)(2-x)}$

$\lim_{x\to 0} \dfrac{1}{2(2-x)} = \boxed{\dfrac{1}{4}}$

10) $\frac{0}{0}$ $\lim_{x\to 2} \dfrac{\frac{2}{x}-1}{x-2}$ (x)

$\lim_{x\to 2} \dfrac{2-1x}{x(x-2)} = \lim_{x\to 2} \dfrac{-1}{x} = \boxed{\dfrac{-1}{2}}$