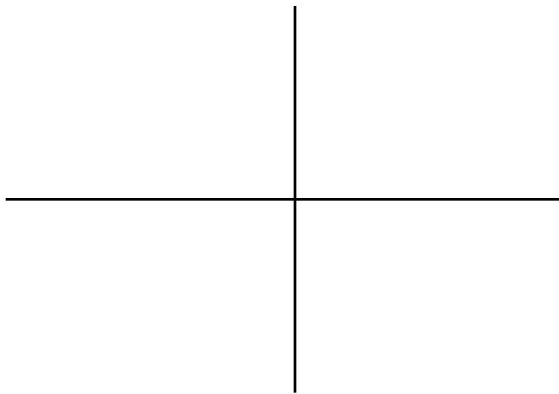


Graph each function and determine the limits.

$$1. f(x) = \begin{cases} x+1 & \text{if } x > 3 \\ -2x+4 & \text{if } x \leq 3 \end{cases}$$

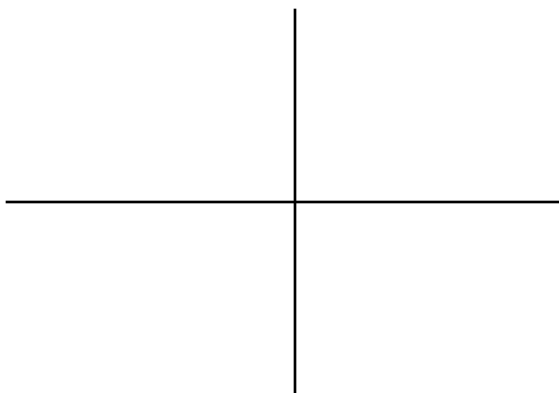


a. $\lim_{x \rightarrow 3^+} f(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 3^-} f(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 3} f(x) = \underline{\hspace{2cm}}$

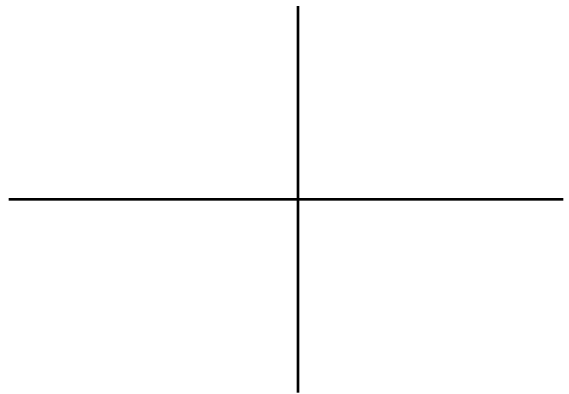
$$3. h(x) = \begin{cases} x+4 & \text{if } x \geq 2 \\ 6 & \text{if } x < 2 \end{cases}$$



a. $\lim_{x \rightarrow 2^+} h(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 2^-} h(x) = \underline{\hspace{2cm}}$

$$2. g(x) = \begin{cases} x+3 & \text{if } x > 1 \\ -2x+6 & \text{if } x \leq 1 \end{cases}$$

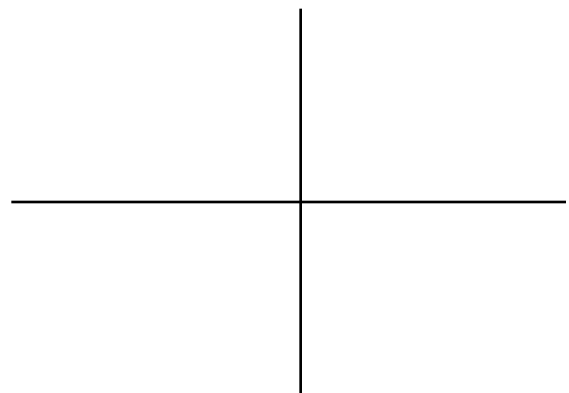


a. $\lim_{x \rightarrow 1^+} g(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 1^-} g(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 1} g(x) = \underline{\hspace{2cm}}$

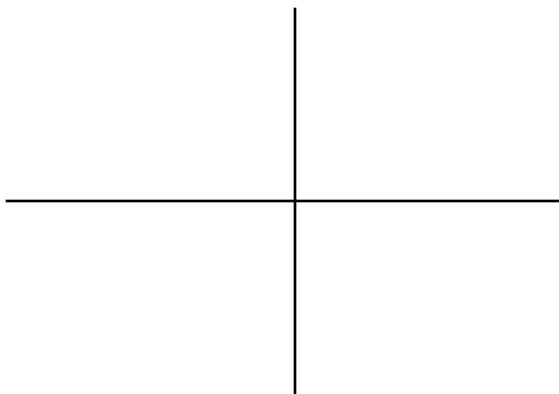
$$4. m(x) = \begin{cases} -3x+3 & \text{if } x > 2 \\ x & \text{if } x \leq 2 \end{cases}$$



a. $\lim_{x \rightarrow 2^+} m(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 2^-} m(x) = \underline{\hspace{2cm}}$

$$5. \quad h(x) = \begin{cases} x^2 + 2 & \text{if } x > 1 \\ 2x + 1 & \text{if } x \leq 1 \end{cases}$$

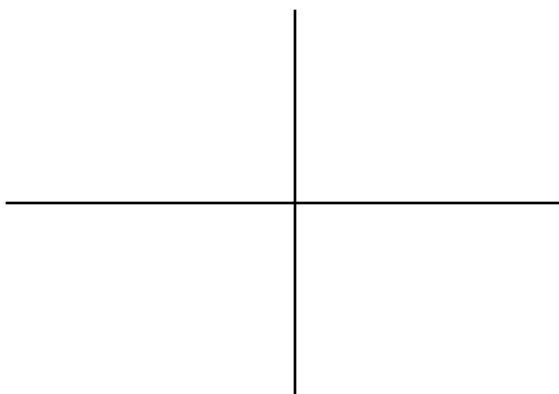


a. $\lim_{x \rightarrow 1^+} h(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 1^-} h(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 1} h(x) = \underline{\hspace{2cm}}$

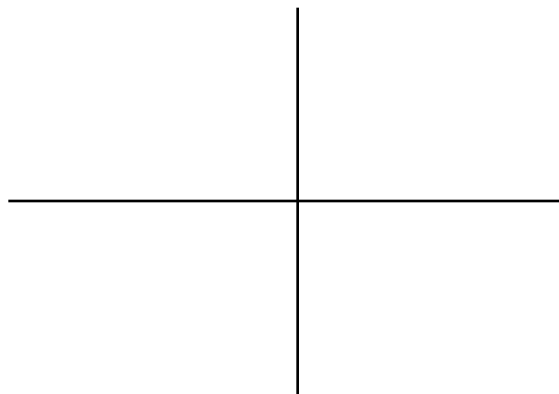
$$7. \quad h(x) = \begin{cases} |x| - 2 & \text{if } x > -3 \\ \frac{-2}{3}x & \text{if } x \leq -3 \end{cases}$$



a. $\lim_{x \rightarrow -3^+} h(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow -3^-} h(x) = \underline{\hspace{2cm}}$

$$6. \quad g(x) = \begin{cases} -x^2 + 2 & \text{if } x \geq 1 \\ -x + 4 & \text{if } x < 1 \end{cases}$$

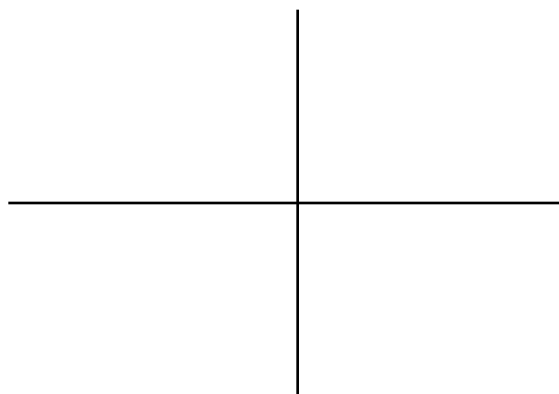


a. $\lim_{x \rightarrow 1^+} g(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 1^-} g(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 1} g(x) = \underline{\hspace{2cm}}$

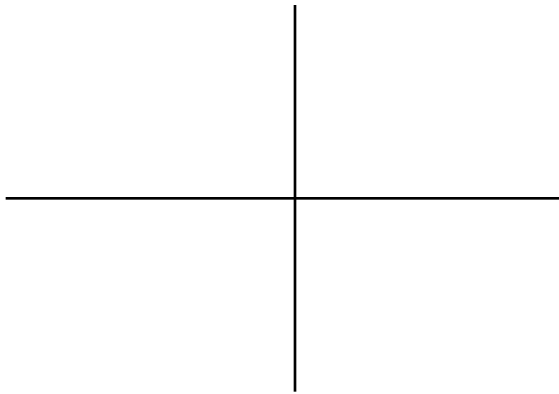
$$8. \quad m(x) = \begin{cases} |x| + 2 & \text{if } x > 1 \\ -x^2 + 4 & \text{if } x \leq 1 \end{cases}$$



a. $\lim_{x \rightarrow 1^+} m(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 1^-} m(x) = \underline{\hspace{2cm}}$

$$9. \quad h(x) = \begin{cases} x^2 & \text{if } x \geq -1 \\ \sqrt{-x} & \text{if } x < -1 \end{cases}$$

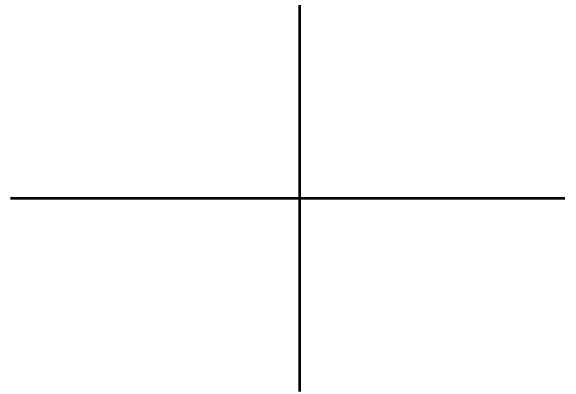


a. $\lim_{x \rightarrow 2^+} h(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 2^-} h(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 2} h(x) = \underline{\hspace{2cm}}$

$$10. \quad w(x) = \begin{cases} x^3 - 1 & \text{if } x \geq 2 \\ x^2 + 3 & \text{if } x < 2 \end{cases}$$

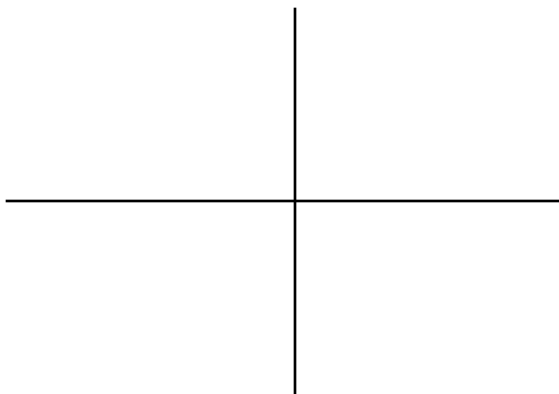


a. $\lim_{x \rightarrow 2^+} w(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 2^-} w(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 2} w(x) = \underline{\hspace{2cm}}$

$$11. \quad w(x) = \begin{cases} \sqrt[3]{x} & \text{if } x \geq 0 \\ -\sqrt{-x} & \text{if } x < 0 \end{cases}$$

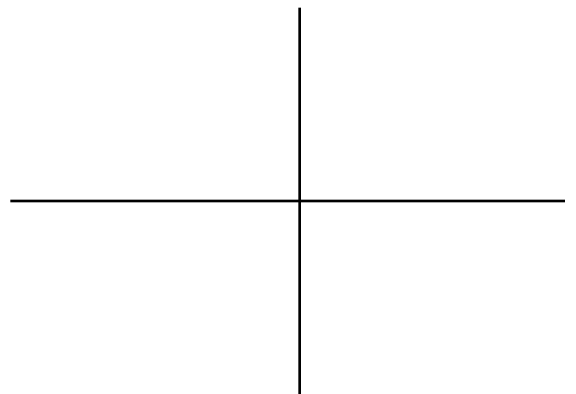


a. $\lim_{x \rightarrow -0^+} w(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 0^-} w(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 0} w(x) = \underline{\hspace{2cm}}$

$$12. \quad h(x) = \begin{cases} x^2 & \text{if } x \geq -3 \\ -2x + 3 & \text{if } x < -3 \end{cases}$$

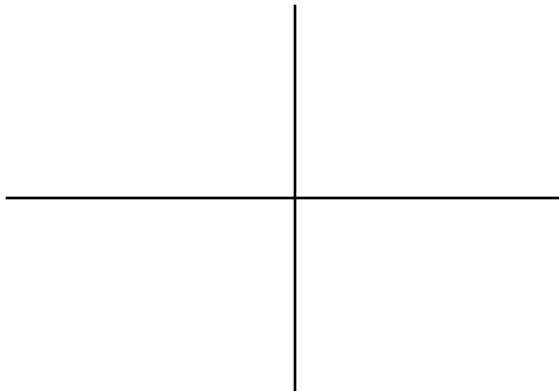


a. $\lim_{x \rightarrow -3^+} h(x) = \underline{\hspace{2cm}}$

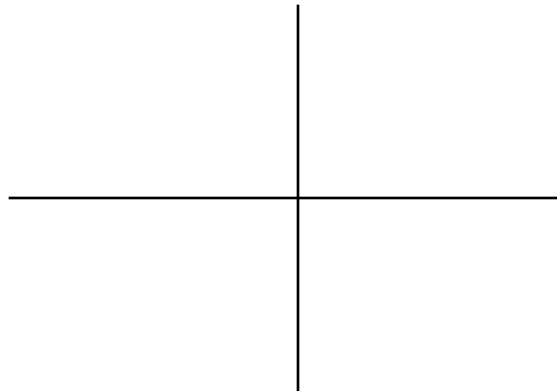
b. $\lim_{x \rightarrow -3^-} h(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow -3} h(x) = \underline{\hspace{2cm}}$

$$13. f(x) = \begin{cases} x^2 + 1 & \text{if } x > 2 \\ 2x + 1 & \text{if } -1 < x \leq 2 \\ -x^2 & \text{if } x \leq -1 \end{cases}$$



$$14. f(x) = \begin{cases} x^2 - 4 & \text{if } x > 3 \\ 2x - 1 & \text{if } -2 \leq x \leq 3 \\ -x^2 + 3 & \text{if } x < -2 \end{cases}$$



a. $\lim_{x \rightarrow 2^+} f(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 2^-} f(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 2} f(x) = \underline{\hspace{2cm}}$

d. $\lim_{x \rightarrow -1^+} f(x) = \underline{\hspace{2cm}}$

e. $\lim_{x \rightarrow -1^-} f(x) = \underline{\hspace{2cm}}$

e. $\lim_{x \rightarrow -1} f(x) = \underline{\hspace{2cm}}$

a. $\lim_{x \rightarrow 3^+} f(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 3^-} f(x) = \underline{\hspace{2cm}}$

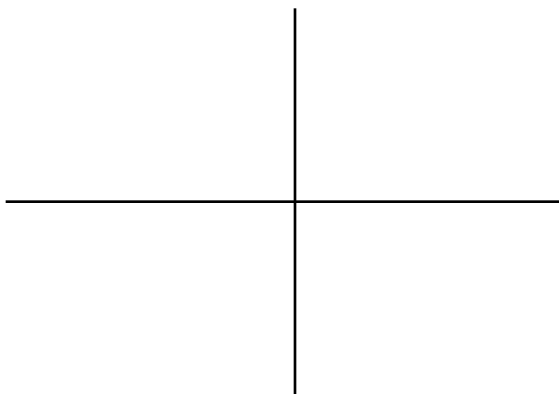
c. $\lim_{x \rightarrow 3} f(x) = \underline{\hspace{2cm}}$

d. $\lim_{x \rightarrow -2^+} f(x) = \underline{\hspace{2cm}}$

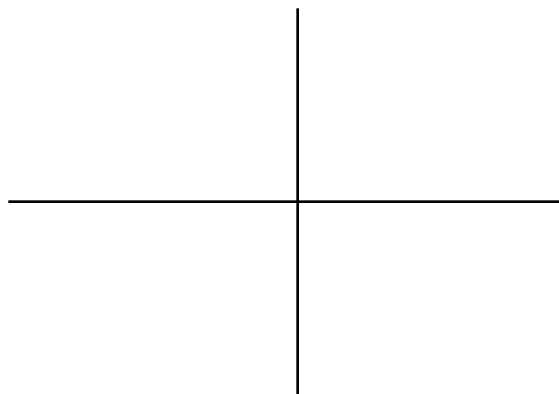
e. $\lim_{x \rightarrow -2^-} f(x) = \underline{\hspace{2cm}}$

e. $\lim_{x \rightarrow -2} f(x) = \underline{\hspace{2cm}}$

$$15. \quad f(x) = \begin{cases} \sqrt[3]{x} - 2 & \text{if } x > 8 \\ x - 4 & \text{if } 0 \leq x \leq 8 \\ -x^3 & \text{if } x < 0 \end{cases}$$



$$16. \quad f(x) = \begin{cases} x + 1 & \text{if } x > 2 \\ 3 & \text{if } -3 < x \leq 2 \\ -x - 1 & \text{if } x \leq -3 \end{cases}$$



a. $\lim_{x \rightarrow 8^+} f(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 8^-} f(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 8} f(x) = \underline{\hspace{2cm}}$

d. $\lim_{x \rightarrow 0^+} f(x) = \underline{\hspace{2cm}}$

e. $\lim_{x \rightarrow 0^-} f(x) = \underline{\hspace{2cm}}$

f. $\lim_{x \rightarrow 0} f(x) = \underline{\hspace{2cm}}$

a. $\lim_{x \rightarrow 2^+} f(x) = \underline{\hspace{2cm}}$

a. $\lim_{x \rightarrow 2^-} f(x) = \underline{\hspace{2cm}}$

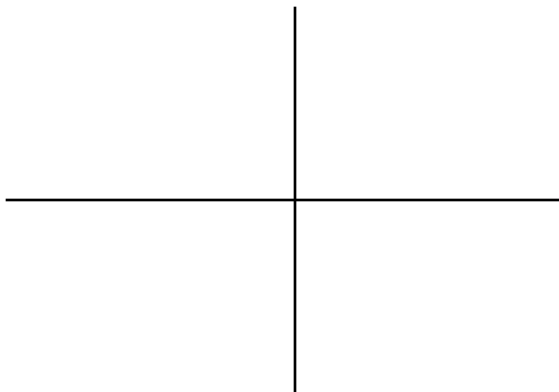
c. $\lim_{x \rightarrow 2} f(x) = \underline{\hspace{2cm}}$

d. $\lim_{x \rightarrow -3^+} f(x) = \underline{\hspace{2cm}}$

e. $\lim_{x \rightarrow -3^-} f(x) = \underline{\hspace{2cm}}$

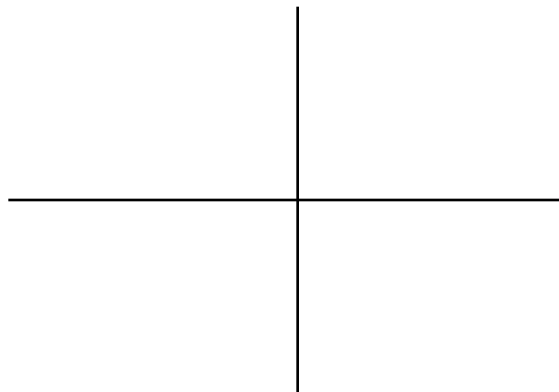
f. $\lim_{x \rightarrow -3} f(x) = \underline{\hspace{2cm}}$

$$17. f(x) = \begin{cases} x^3 & \text{if } x > 0 \\ 4 & \text{if } x = 0 \\ 2x+3 & \text{if } x < 0 \end{cases}$$



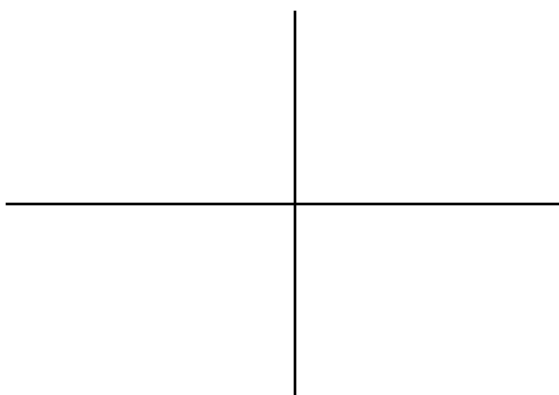
- a. $\lim_{x \rightarrow 0^+} f(x) = \underline{\hspace{2cm}}$
- b. $\lim_{x \rightarrow 0^-} f(x) = \underline{\hspace{2cm}}$
- c. $\lim_{x \rightarrow 0} f(x) = \underline{\hspace{2cm}}$

$$18. f(x) = \begin{cases} 3x+2 & \text{if } x > 0 \\ 2 & \text{if } x = 0 \\ -2x+2 & \text{if } x < 0 \end{cases}$$



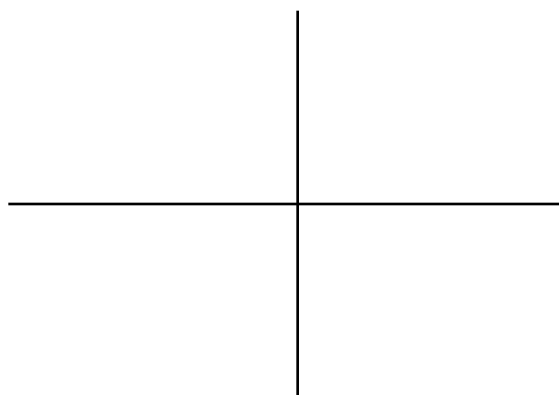
- a. $\lim_{x \rightarrow 0^+} f(x) = \underline{\hspace{2cm}}$
- a. $\lim_{x \rightarrow 0^-} f(x) = \underline{\hspace{2cm}}$
- c. $\lim_{x \rightarrow 0} f(x) = \underline{\hspace{2cm}}$

$$19. f(x) = \begin{cases} 2x+1 & \text{if } x > 3 \\ 4 & \text{if } x = 3 \\ 3 & \text{if } x < 3 \end{cases}$$



- a. $\lim_{x \rightarrow 3^+} f(x) = \underline{\hspace{2cm}}$
- b. $\lim_{x \rightarrow 3^-} f(x) = \underline{\hspace{2cm}}$
- c. $\lim_{x \rightarrow 3} f(x) = \underline{\hspace{2cm}}$

$$20. f(x) = \begin{cases} -4x+1 & \text{if } x > -1 \\ 2 & \text{if } x = -1 \\ 5 & \text{if } x < -1 \end{cases}$$



- a. $\lim_{x \rightarrow -1^+} f(x) = \underline{\hspace{2cm}}$
- a. $\lim_{x \rightarrow -1^-} f(x) = \underline{\hspace{2cm}}$
- c. $\lim_{x \rightarrow -1} f(x) = \underline{\hspace{2cm}}$

$$21. f(x) = \begin{cases} 3x-2 & \text{if } x > 2 \\ -2x+4 & \text{if } x \leq 2 \end{cases}$$

a. $\lim_{x \rightarrow 2^+} f(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 2^-} f(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 2} f(x) = \underline{\hspace{2cm}}$

$$23. f(x) = \begin{cases} \sqrt{x+2} & \text{if } x > 2 \\ -x^2+6 & \text{if } x \leq 2 \end{cases}$$

a. $\lim_{x \rightarrow 2^+} f(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 2^-} f(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 2} f(x) = \underline{\hspace{2cm}}$

$$25. f(x) = \begin{cases} \sqrt[3]{x}-2 & \text{if } x > 1 \\ x-4 & \text{if } -1 \leq x \leq 1 \\ 5x & \text{if } x < -1 \end{cases}$$

c. $\lim_{x \rightarrow 1} f(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow -1} f(x) = \underline{\hspace{2cm}}$

$$22. g(x) = \begin{cases} 2x & \text{if } x > 1 \\ x+1 & \text{if } x \leq 1 \end{cases}$$

a. $\lim_{x \rightarrow 1^+} g(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow 1^-} g(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow 1} g(x) = \underline{\hspace{2cm}}$

$$24. g(x) = \begin{cases} 2x & \text{if } x > -3 \\ -6 & \text{if } x \leq -3 \end{cases}$$

a. $\lim_{x \rightarrow -3^+} g(x) = \underline{\hspace{2cm}}$

b. $\lim_{x \rightarrow -3^-} g(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow -3} g(x) = \underline{\hspace{2cm}}$

$$26. f(x) = \begin{cases} 3x+1 & \text{if } x > 2 \\ 5 & \text{if } -3 \leq x \leq 2 \\ -2x-1 & \text{if } x < -3 \end{cases}$$

c. $\lim_{x \rightarrow 2} g(x) = \underline{\hspace{2cm}}$

c. $\lim_{x \rightarrow -3} g(x) = \underline{\hspace{2cm}}$