

**Evaluating the following limits. Support your answer with work.**

$$1. \lim_{x \rightarrow 2} f(x) \begin{cases} 3x + 1, x < 2 \\ 8, x = 2 \\ x^2 + 3, x > 2 \end{cases} \quad \underline{\hspace{2cm}}$$

$$2. \lim_{x \rightarrow 1} \frac{x^2 - 6x + 5}{x - 1} \quad \underline{\hspace{2cm}}$$

$$3. \lim_{x \rightarrow 3} \begin{cases} x^2, x \geq 3 \\ 6x - 4, x < 3 \end{cases} \quad \underline{\hspace{2cm}}$$

$$4. \lim_{x \rightarrow 4} \frac{2x^2 - 4x}{x^2 - 4} \quad \underline{\hspace{2cm}}$$

$$5. \lim_{x \rightarrow 0} \frac{\sqrt{2+x} - \sqrt{2}}{x} \quad \underline{\hspace{2cm}}$$

$$6. \lim_{x \rightarrow 6} \frac{2x - 12}{x^2 - x - 30} \quad \underline{\hspace{2cm}}$$

$$7. \lim_{x \rightarrow 3} \frac{\sqrt{x} - \sqrt{3}}{x - 3} \quad \underline{\hspace{2cm}}$$

$$8. \lim_{x \rightarrow 0} \frac{\tan x}{2x} \quad \underline{\hspace{2cm}}$$

$$9. \lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2} \quad \underline{\hspace{2cm}}$$

$$10. \lim_{x \rightarrow 0} \frac{\sin^2 x}{x} \quad \underline{\hspace{2cm}}$$

$$11. \lim_{t \rightarrow \infty} \frac{t^2}{t + 3} \quad \underline{\hspace{2cm}}$$

$$12. \lim_{x \rightarrow \infty} \frac{1 - 6x}{1 + 5x} \quad \underline{\hspace{2cm}}$$

$$13. \lim_{t \rightarrow 0} \frac{1 - \cos t}{\sin t} \quad \underline{\hspace{2cm}}$$

$$14. \lim_{x \rightarrow 0} \frac{\sin 5x}{3x} \quad \underline{\hspace{2cm}}$$

$$15. \lim_{x \rightarrow 0} \frac{\sin 2x}{\tan 3x} \quad \underline{\hspace{2cm}}$$

$$16. \lim_{x \rightarrow \infty} \sqrt[3]{\frac{1+8x^2}{x^2+4}} \quad \underline{\hspace{2cm}}$$

$$17. \lim_{x \rightarrow \infty} \sqrt{\frac{2x^2+x+3}{(x-1)(x+1)}} \quad \underline{\hspace{2cm}}$$

$$18. \lim_{x \rightarrow \infty} \frac{\sqrt{3x+1}}{4} \quad \underline{\hspace{2cm}}$$

$$19. \lim_{x \rightarrow \infty} \frac{2x+1}{\sqrt{5x^2+3}} \quad \underline{\hspace{2cm}}$$

$$20. \lim_{x \rightarrow \infty} \frac{3x+9}{\sqrt{2x^2+x-3}} \quad \underline{\hspace{2cm}}$$

$$21. \lim_{x \rightarrow 0} \frac{\frac{1}{x+1} - 1}{x} \quad \underline{\hspace{2cm}}$$

$$22. \lim_{x \rightarrow 0} \frac{\frac{1}{x+2} - 1}{x+1} \quad \underline{\hspace{2cm}}$$

$$23. \lim_{x \rightarrow 2} \begin{cases} 5-x, & x \leq 2 \\ x+3, & x > 2 \end{cases} \quad \underline{\hspace{2cm}}$$

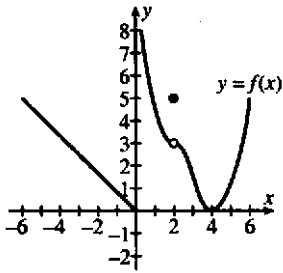
$$24. \lim_{x \rightarrow 0^-} \begin{cases} x-6, & x \geq 0 \\ x^2-4, & x < 0 \end{cases} \quad \underline{\hspace{2cm}}$$

$$25. \lim_{x \rightarrow 5} \frac{\sqrt{x-1}-2}{x-5} \quad \underline{\hspace{2cm}}$$

$$26. \lim_{x \rightarrow 1} \frac{\sqrt{3}-\sqrt{x+2}}{1-x} \quad \underline{\hspace{2cm}}$$

**Find the following limits.**

27.



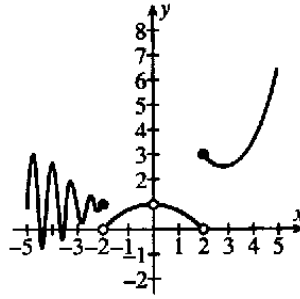
a.)  $\lim_{x \rightarrow -5} f(x) =$  \_\_\_\_\_

b.)  $\lim_{x \rightarrow 2} f(x) =$  \_\_\_\_\_

c.)  $\lim_{x \rightarrow 0} f(x) =$  \_\_\_\_\_

d.)  $\lim_{x \rightarrow 4} f(x) =$  \_\_\_\_\_

28.



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

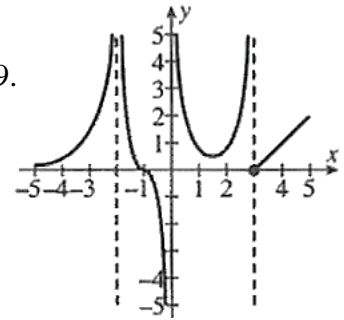
b.)  $\lim_{x \rightarrow -2^+} f(x) =$  \_\_\_\_\_

c.)  $\lim_{x \rightarrow -2} f(x) =$  \_\_\_\_\_

d.)  $\lim_{x \rightarrow 2^+} f(x) =$  \_\_\_\_\_

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

29.



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

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

c.)  $\lim_{x \rightarrow -2} f(x) =$  \_\_\_\_\_

d.)  $\lim_{x \rightarrow 3^-} f(x) =$  \_\_\_\_\_

e.)  $\lim_{x \rightarrow 3^+} f(x) =$  \_\_\_\_\_

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

g.)  $\lim_{x \rightarrow 0^+} f(x) =$  \_\_\_\_\_

h.)  $\lim_{x \rightarrow 0^-} f(x) =$  \_\_\_\_\_

i.)  $\lim_{x \rightarrow 0} f(x) =$  \_\_\_\_\_