

Graph each function below, then answer each of the questions.

$$1. f(x) = \begin{cases} x^2, & \text{if } 0 \leq x \leq 2 \\ 4, & \text{if } x > 2 \end{cases}$$

a) Continuous for what values of x? _____

b) Domain? _____ Range? _____

$$2. g(x) = \begin{cases} x+1, & \text{if } x < 0 \\ 2x, & \text{if } x \geq 0 \end{cases}$$

a) Continuous for what values of x? _____

b) Domain? _____ Range? _____

$$3. f(x) = \begin{cases} 1, & \text{if } x \neq 3 \\ 0, & \text{if } x = 3 \end{cases}$$

a) $\lim_{x \rightarrow 3^+} f(x)$ _____ b) $\lim_{x \rightarrow 3^-} f(x)$ _____

c) $\lim_{x \rightarrow 3} f(x)$ _____

$$4. h(x) = \begin{cases} x^3, & \text{if } x \neq -2 \\ 5, & \text{if } x = -2 \end{cases}$$

a) $\lim_{x \rightarrow -2^+} h(x)$ _____ b) $\lim_{x \rightarrow -2^-} h(x)$ _____

c) $\lim_{x \rightarrow -2} h(x)$ _____

$$5. k(x) = \begin{cases} 0, & \text{if } x \leq 0 \\ x+1, & \text{if } x > 0 \end{cases}$$

a) $\lim_{x \rightarrow 0^+} k(x)$ _____ b) $\lim_{x \rightarrow 0^-} k(x)$ _____

c) $\lim_{x \rightarrow 0} k(x)$ _____

$$6. g(x) = \begin{cases} -4, & \text{if } x < 1 \\ 2, & \text{if } x > 1 \end{cases}$$

a) $\lim_{x \rightarrow 1^+} g(x)$ _____ b) $\lim_{x \rightarrow 1^-} g(x)$ _____

c) $\lim_{x \rightarrow 1} g(x)$ _____

$$7. f(x) = \begin{cases} 1, & \text{if } x < 4 \\ \sqrt{x}, & \text{if } x > 4 \end{cases}$$

a) $\lim_{x \rightarrow 4^+} f(x)$ _____ b) $\lim_{x \rightarrow 4^-} f(x)$ _____

c) $\lim_{x \rightarrow 4} f(x)$ _____