

Name: _____

Limits

Exercise 1: Find the value(s) of c such that the limit of $f(x)$ as x approaches 2 exists

$$f(x) = \begin{cases} cx^2 - 3 & x \leq 2 \\ cx + 2 & x > 2 \end{cases}$$

Exercise 2: Find the value(s) of k such that $\lim_{x \rightarrow 1} f(x)$ exists

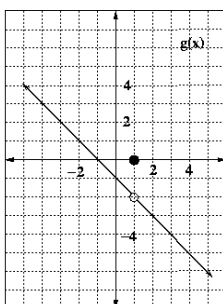
$$f(x) = \begin{cases} k^2x & x \geq 1 \\ 3kx - 2 & x < 1 \end{cases}$$

Exercise 3: Determine a value of c such that $\lim_{x \rightarrow 1} I(x)$ exists

$$I(x) = \frac{x^2 - 4x + c}{x - 1}$$

Exercise 4: Given that $h(x) = \frac{n(x)}{x - 1}$

- Determine a quadratic function $n(x)$ such that the limit of $h(x)$ as x approaches 1 exists.
- Determine a quadratic function $n(x)$ such that $\lim_{x \rightarrow 1} h(x) = 27$

Exercise 5: Using the given graph of $g(x)$, find the following left- and right-hand limits.

- $\lim_{x \rightarrow 0^-} g(x)$
- $\lim_{x \rightarrow 0^+} g(x)$
- $\lim_{x \rightarrow 1^-} g(x)$
- $\lim_{x \rightarrow 1^+} g(x)$