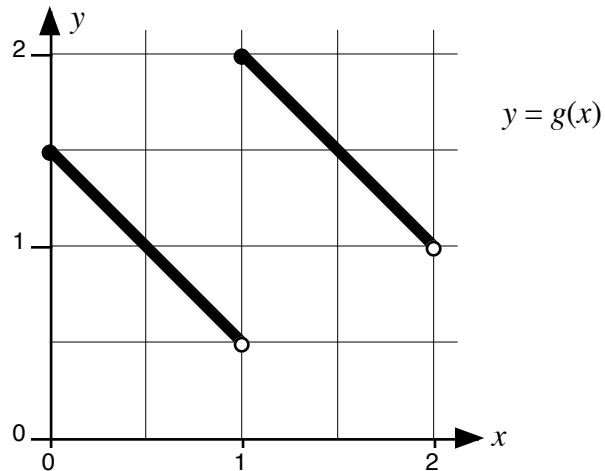


Quiz #3

1. In this problem, the function $g(x)$ will always refer to the function defined by the following graph.



For each of the quantities listed below, state the value of the quantity if it exists. If you believe that any of the quantities listed below does *not* exist, briefly (1-2 sentences) explain why not.

(a) (1 point) $\lim_{x \rightarrow 1^+} g(x)$

(b) (1 point) $\lim_{x \rightarrow 1^-} g(x)$

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

2. In this problem, the function $k(x)$ will always refer to the function defined by the formula:

$$k(x) = \frac{\tan(2x)}{\tan(3x)}.$$

(a) (1 point) Is $x = 0$ in the domain of $k(x)$? Briefly explain how you know.

(b) (2 points) Use your calculator to complete all entries in both of the tables shown below. Give your answers correct to at least four decimal places.

x	0.01	0.001	0.0001	0.00001
k(x)				

x	-0.00001	-0.0001	-0.001	-0.01
k(x)				

(c) (2 points) Do the entries in the Tables in Part (b) provide evidence to suggest that:

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

exists or evidence to suggest that this limit does not exist? Briefly explain how you know.

3. Explain when asked and show your work.

(a) **(1 point)** Briefly explain what is wrong with the following equation:

$$\frac{x^2 + 3x - 10}{x - 2} = x + 5.$$

(b) **(1 point)** Calculate the value of the limit: $\lim_{x \rightarrow 0} \frac{x^2 + 3x - 10}{x - 2}$.