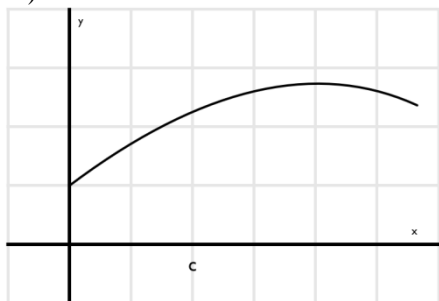


Limits & Continuity

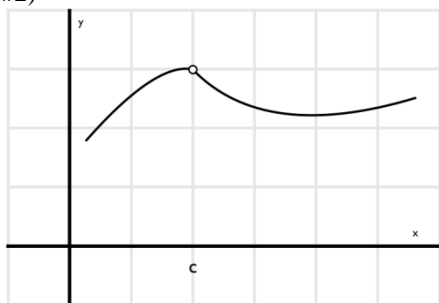
1.4A – Continuity

A: Determine whether each function is continuous at c . If discontinuous, state why.

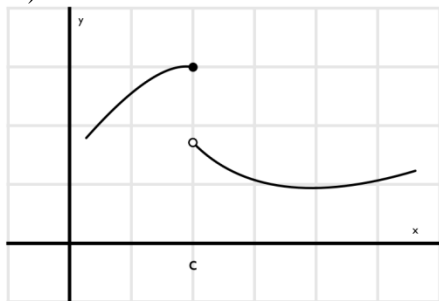
#1)



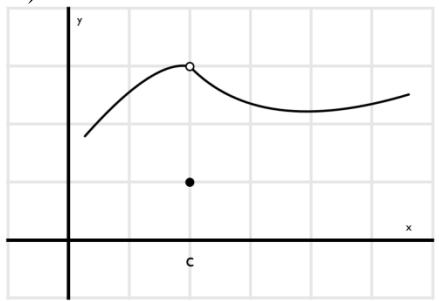
#2)



#3)



#4)



B: Determine whether each function is continuous. If discontinuous, state where it is discontinuous. (You've graphed some of these functions on previous homework.)

#5) $f(x) = 6x + 8$

#6) $f(x) = \frac{x+2}{x-2}$

#7) $f(x) = \frac{1}{x^2+29x+28}$

#8) $f(x) = \begin{cases} x & \text{if } x < 0 \\ x - 6 & \text{if } x \geq 0 \end{cases}$

Limits & Continuity

1.4A – Continuity

$$\#9) f(x) = \begin{cases} 2x + 1 & \text{if } x < 2 \\ -2x - 1 & \text{if } x \geq 2 \end{cases}$$

C: Decide if each statement is true or false. If false give a counterexample. (A counterexample makes the hypothesis true and the conclusion false.)

$$\#12) \text{ If } \lim_{x \rightarrow 5} f(x) = 10, \text{ then } \lim_{x \rightarrow 5^+} f(x) = 10$$

$$\#10) f(x) = \begin{cases} \frac{1}{3}x + 5 & \text{if } x < 9 \\ x - 1 & \text{if } x \geq 9 \end{cases}$$

$$\#13) \text{ If } \lim_{x \rightarrow 5^+} f(x) = 10, \text{ then } \lim_{x \rightarrow 5} f(x) = 10$$

$$\#14) \text{ If } f(1) = 7, \text{ then } \lim_{x \rightarrow 1} f(x) = 7$$

$$\#11) f(x) = \begin{cases} 2x & \text{if } x < 3 \\ -2x + 12 & \text{if } x \geq 3 \end{cases}$$

#15) If $f(-4)$ is not defined, then $\lim_{x \rightarrow -4} f(x)$ does not exist.