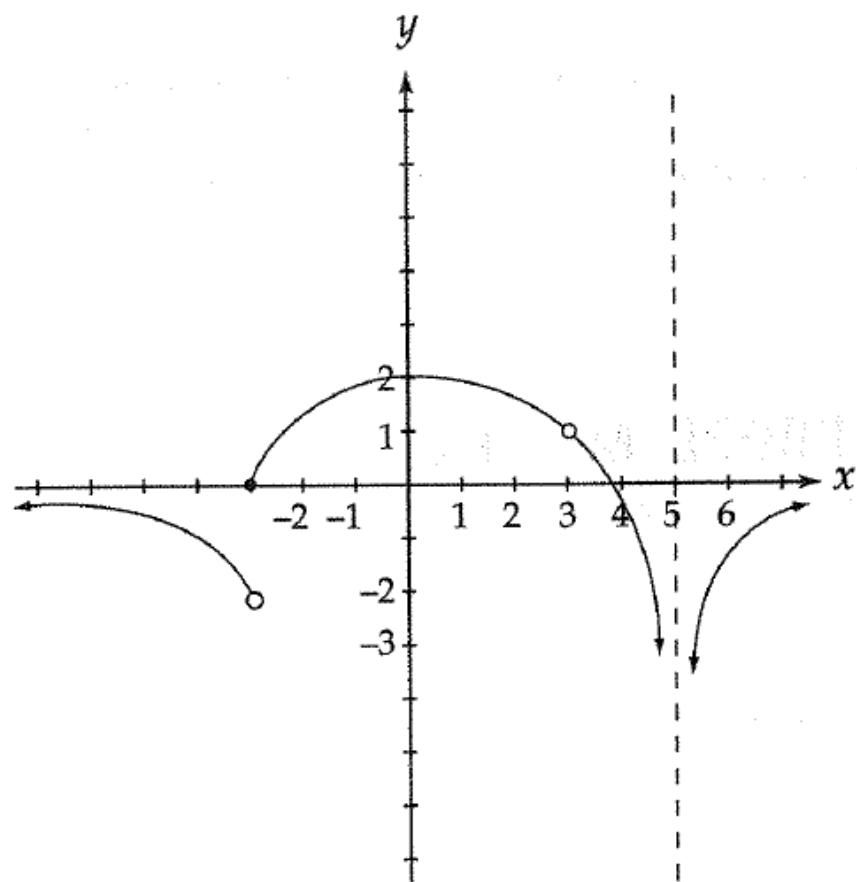


PRACTICE PROBLEM SET 2

Now try these problems.

1. Is the function $f(x) = \begin{cases} x+7, & x < 2 \\ 9, & x = 2 \\ 3x+3, & x > 2 \end{cases}$ continuous at $x = 2$?
2. Is the function $f(x) = \begin{cases} 4x^2 - 2x, & x < 3 \\ 10x - 1, & x = 3 \\ 30, & x > 3 \end{cases}$ continuous at $x = 3$?
3. Is the function $f(x) = \sec x$ continuous everywhere?
4. Is the function $f(x) = \sec x$ continuous on the interval $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$?
5. Is the function $f(x) = \sec x$ continuous on the interval $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$?
6. For what value(s) of k is the function $f(x) = \begin{cases} 3x^2 - 11x - 4, & x \leq 4 \\ kx^2 - 2x - 1, & x > 4 \end{cases}$ continuous at $x = 4$?
7. At what point is the removable discontinuity for the function $f(x) = \frac{x^2 + 5x - 24}{x^2 - x - 6}$?



8. Given the graph of $f(x)$ above, find

(a) $\lim_{x \rightarrow -\infty} f(x)$

(b) $\lim_{x \rightarrow \infty} f(x)$

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

(d) $\lim_{x \rightarrow 3^+} f(x)$

(e) $f(3)$

(f) Any discontinuities.