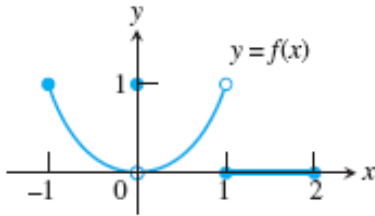


(Note: ** problems are optional)

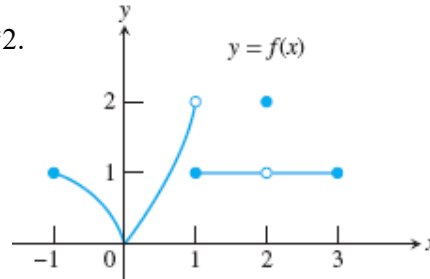
For questions 1 & 2,

- Determine the x -coordinate of each discontinuity on the graph of $f(x)$.
- Evaluate the limit at each discontinuity. Identify each discontinuity as either **removable** or **jump**.
- State the interval(s) on which $f(x)$ is continuous.

1.



**2.



For questions 3-5, answer the following:

- Determine the x -coordinates of any discontinuities on the graph of $f(x)$.
- Evaluate the limit at each discontinuity. Identify the discontinuities as either **infinite** or **removable**.
- State the interval(s) on which $f(x)$ is continuous.

3. $f(x) = \frac{x-2}{x^2-5x+6}$

**4. $f(x) = \frac{x^2-4}{x+2}$

5. $f(x) = \frac{x^2+x-12}{x^2+6x+8}$

**6. Find the value of a that makes $f(x) = \begin{cases} 2x^2 - 4, & x < 2 \\ ax + 3, & x \geq 2 \end{cases}$ continuous on the entire interval.

7. Find the value of a that makes $f(x) = \begin{cases} ax^2 + 2, & x < 3 \\ 4x - 1, & x \geq 3 \end{cases}$ continuous on the entire interval.

Evaluate each limit

8. $\lim_{x \rightarrow \infty} \frac{x^{99}}{e^x}$

9. $\lim_{x \rightarrow \infty} \frac{e^x}{\ln x}$

10. $\lim_{x \rightarrow \infty} \frac{\ln x}{x^{99}}$

11. $\lim_{x \rightarrow -\infty} \frac{x^{99}}{e^x}$