

## Types of Discontinuity

Name \_\_\_\_\_

Explain why the function is discontinuous at the given number  $a$ . Sketch the graph of the function and state the type of discontinuity.

1.  $f(x) = \frac{1}{x+2}$   $a = -2$

2.  $f(x) = \begin{cases} \frac{1}{x+2} & \text{if } x \neq -2 \\ 1 & \text{if } x = -2 \end{cases}$   $a = -2$

3.  $f(x) = \begin{cases} e^x & \text{if } x < 0 \\ x^2 & \text{if } x \geq 0 \end{cases}$   $a = 0$

4.  $f(x) = \begin{cases} \frac{x^2 - x}{x^2 - 1} & \text{if } x \neq 1 \\ 1 & \text{if } x = 1 \end{cases}$   $a = 1$

5.  $f(x) = \begin{cases} \cos x & \text{if } x < 0 \\ 0 & \text{if } x = 0 \\ 1 - x^2 & \text{if } x > 0 \end{cases}$   $a = 0$