

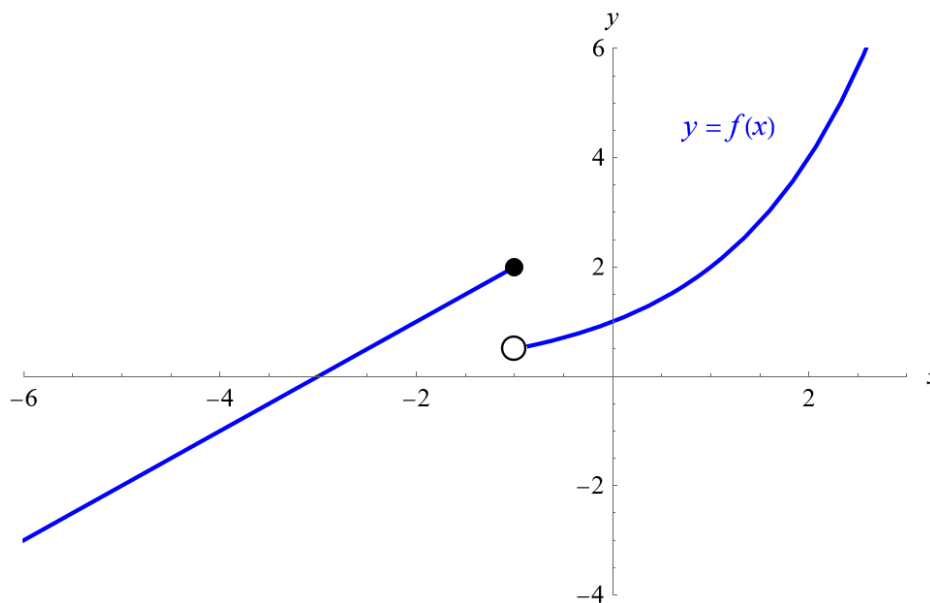
Exercise 19

Explain why the function is discontinuous at the given number a . Sketch the graph of the function.

$$f(x) = \begin{cases} x + 3 & \text{if } x \leq -1 \\ 2^x & \text{if } x > -1 \end{cases} \quad a = -1$$

Solution

A graph of the function versus x is shown below.



The function is discontinuous at $x = -1$ because the left-hand and right-hand limits are not equal there. In other words,

$$\lim_{x \rightarrow -1} f(x)$$

does not exist.