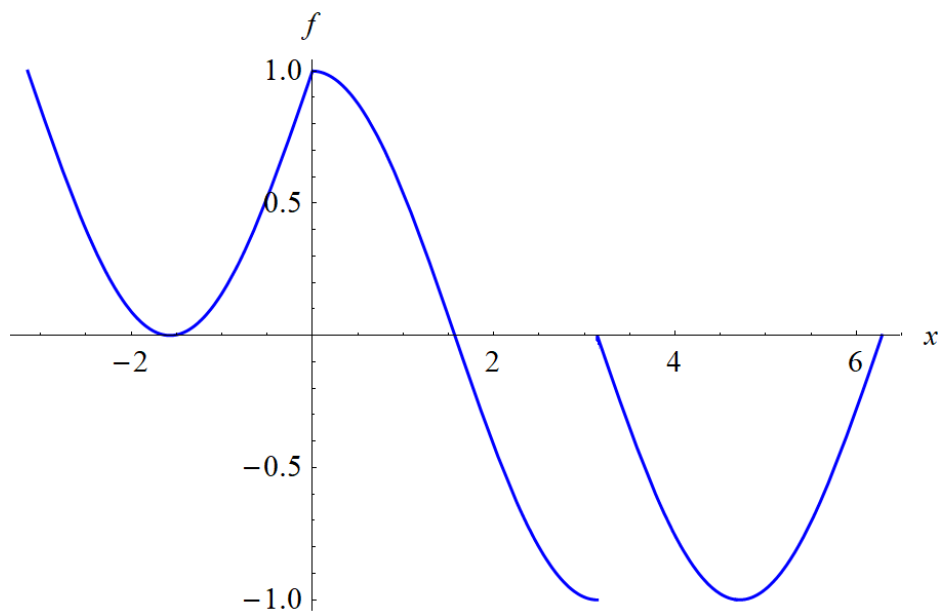


Exercise 12

Sketch the graph of the function and use it to determine the values of a for which $\lim_{x \rightarrow a} f(x)$ exists.

$$f(x) = \begin{cases} 1 + \sin x & \text{if } x < 0 \\ \cos x & \text{if } 0 \leq x \leq \pi \\ \sin x & \text{if } x > \pi \end{cases}$$

Solution



Note that $\lim_{x \rightarrow a} f(x)$ exists wherever the function is continuous. Therefore,

$$\{a \mid a \neq \pi\}.$$