

**Definitions of Even and Odd Functions**

The function  $f$  is an **even function** if  $f(-x) = f(x)$  for all  $x$  in the domain of  $f$ .

- The right side of the equation of an even function does not change if  $x$  is replaced with  $-x$ .

The function  $f$  is an **odd function** if  $f(-x) = -f(x)$  for all  $x$  in the domain of  $f$ .

- Every term on the right side of the equation of an odd function changes sign if  $x$  is replaced with  $-x$ .

Example 3: Determine whether each function is even, odd, or neither.

Use the graph to find the following:

- The domain of  $f$
- The range of  $f$
- The  $x$ -intercepts
- The  $y$ -intercepts
- Intervals on which  $f$  is increasing
- Intervals on which  $f$  is decreasing
- Intervals on which  $f$  is constant
- The number at which  $f$  has a relative minimum
- The relative minimum of  $f$
- $f(-5)$
- The values of  $x$  for which  $f(x) = 3$
- Is  $f$  even, odd, or neither?

