

|         |           |     |           |
|---------|-----------|-----|-----------|
| $x$     | $-\infty$ | $1$ | $+\infty$ |
| $f'(x)$ | $-$       | $0$ | $+$       |
| $f(x)$  | $+\infty$ |     | $+\infty$ |

Diagram illustrating the function  $f(x)$  and its derivative  $f'(x)$  for the function  $f(x) = \frac{1}{2}(x-1)^2 - 2$ .

The table shows the sign of the derivative  $f'(x)$  and the behavior of the function  $f(x)$  as  $x$  approaches  $-\infty$ ,  $1$ , and  $+\infty$ .

Arrows indicate that the function  $f(x)$  decreases from  $+\infty$  to a minimum value of  $-2$  at  $x = 1$ , and then increases back to  $+\infty$ .

