Exercise 42

Evaluate $f(-3)$, $f(0)$, and $f(2)$ for the piecewise defined function. Then sketch the graph of the function.

$$f(x) = \begin{cases} 3 - \frac{1}{2}x & \text{if } x < 2 \\ 2x - 5 & \text{if } x \geq 2 \end{cases}$$

Solution

$x = -3$ and $x = 0$ satisfy $x < 2$, and $x = 2$ satisfies $x \geq 2$. So then

$$f(-3) = 3 - \frac{1}{2}(-3) = \frac{9}{2}$$
$$f(0) = 3 - \frac{1}{2}(0) = 3$$
$$f(2) = 2(2) - 5 = -1.$$