

## Exercise 314

For the following problems, state the domain and range of the given functions:

$$f = x^2 + 2x - 3, \quad g = \ln(x - 5), \quad h = \frac{1}{x + 4}$$

$h$

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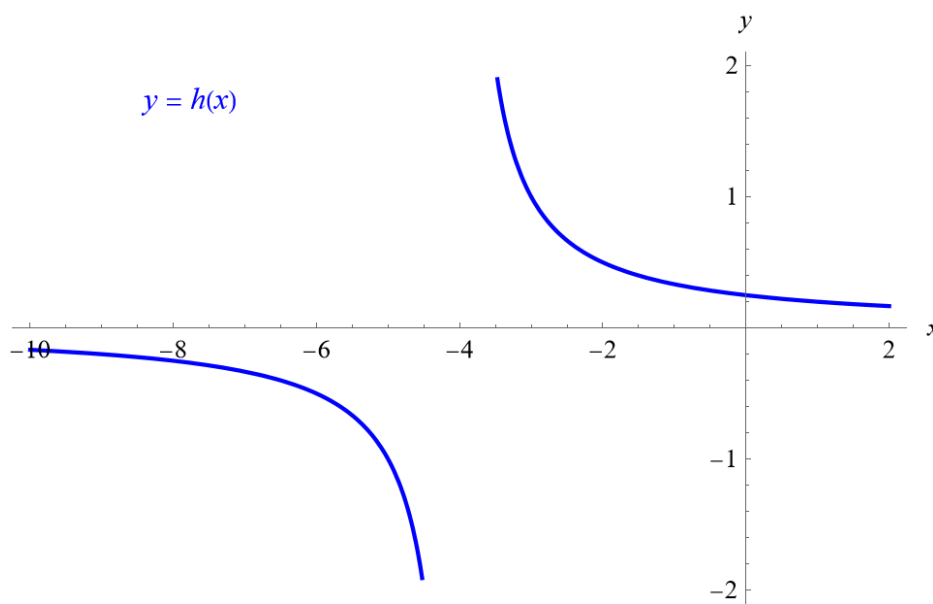
### Solution

$h$  is a rational function, and the one thing to know about rational functions is that the denominator cannot be zero.

$$x + 4 \neq 0$$

$$x \neq -4$$

Therefore, the domain is  $\{x \mid x \neq -4\}$ . Below is a graph of  $h(x)$  versus  $x$ .



The rational function takes on all  $y$ -values except for zero. Therefore, the range is  $\{y \mid y \neq 0\}$ .