Exercise 6

In Exercises 1–6, find the domain and range of each function.

$$G(t) = \frac{2}{t^2 - 16}$$

Solution

The only requirement for a rational function is that the denominator cannot be zero.

$$t^2 - 16 \neq 0$$

$$(t + 4)(t - 4) \neq 0$$

$$t = \{-4, 4\}$$

As a result,

$$\text{Domain:} \quad \{t \mid t \neq -4, 4\}.$$

When t is slightly less than or greater than the values of t above, the fraction is a really big positive or a really big negative number, respectively. The lowest value of G is $-\infty$ and the highest value of G is ∞. It might seem that $-\infty < y < \infty$; however, G can never be zero because the numerator is 2, a nonzero constant.

$$\text{Range:} \quad \{y \mid y \neq 0\}$$