Exercise 234
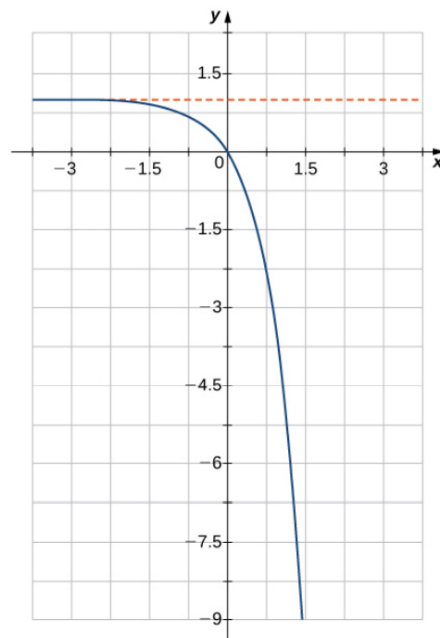
For the following exercises, match the exponential equation to the correct graph.

    a. $y = 4^{-x}$

    b. $y = 3^{x-1}$

    c. $y = 2^{x+1}$

    d. $y = \left(\frac{1}{2}\right)^x + 2$

    e. $y = -3^{-x}$

    f. $y = 1 - 5^x$

Solution

The equation corresponding to the given graph is f.,

$$y = 1 - 5^x.$$

Notice that at $x = 0$ the function has the value $y = 0$.

$$y(0) = 1 - 5^0 = 1 - 1 = 0$$

Also, notice that the function tends to $y = -\infty$ as x becomes large.

$$y = 1 - \underbrace{5^x}_{\approx \infty \text{ for large } x} \approx -\infty$$