Exercise 235

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

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

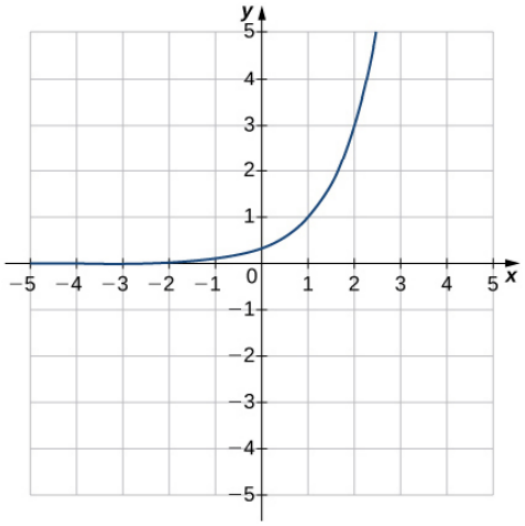
b. $y = 3^{x-1}$

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 b.,

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

Notice that at $x = 1$ the function has the value $y = 1$, and at $x = 2$ the function has the value $y = 3$.

$$y(1) = 3^{1-1} = 3^0 = 1$$

$$y(2) = 3^{2-1} = 3^1 = 3$$

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

$$y = \underbrace{3^{x-1}}_{\approx \infty \text{ for large } x} \approx \infty$$