

## Exercise 15

Make a rough sketch of the graph of the function. Do not use a calculator. Just use the graphs given in Figures 3 and 13 and, if necessary, the transformations of Section 1.3.

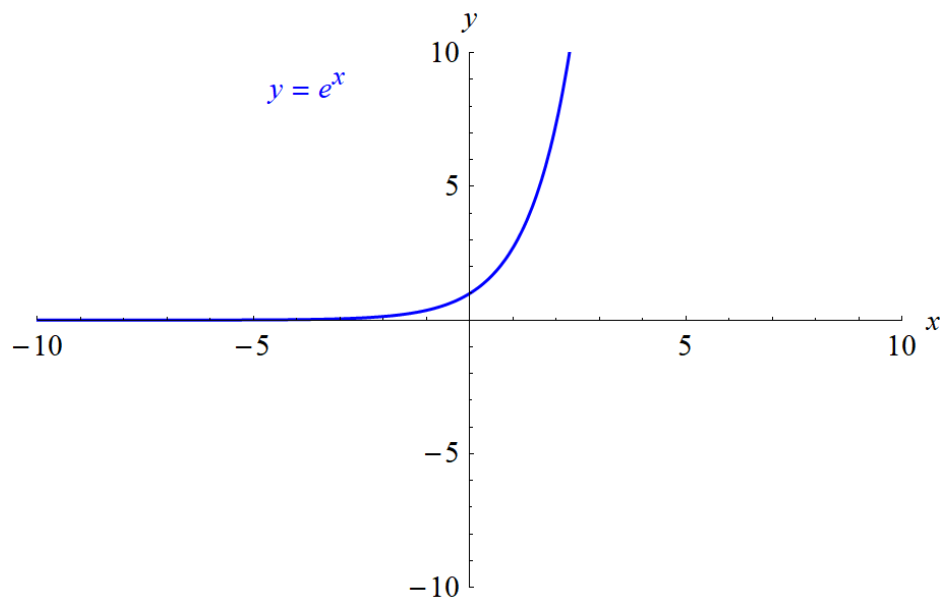
$$y = 1 - \frac{1}{2}e^{-x}$$

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### Solution

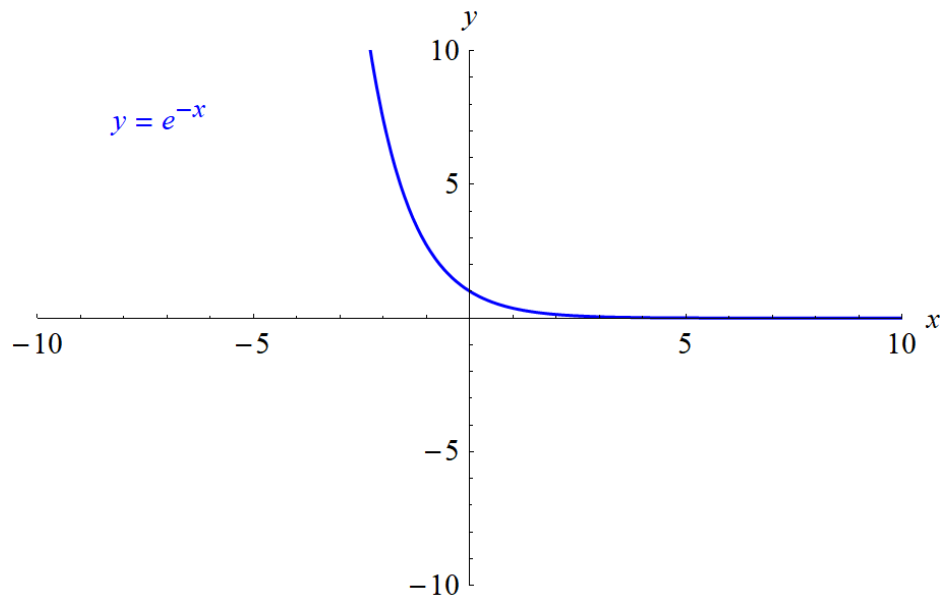
Start with the graph of

$$y = e^x.$$



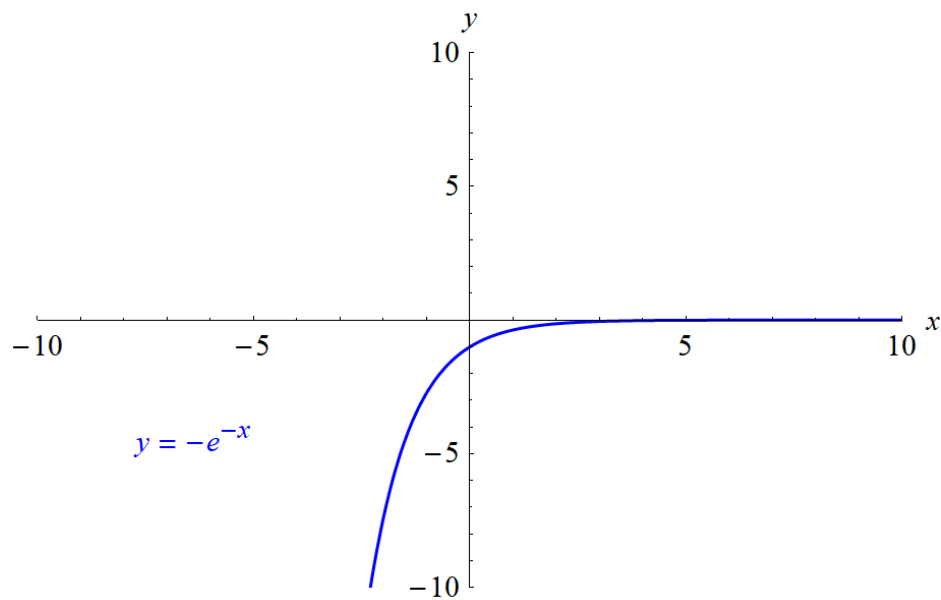
Replace  $x$  with  $-x$  to reflect the graph over the  $y$ -axis.

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



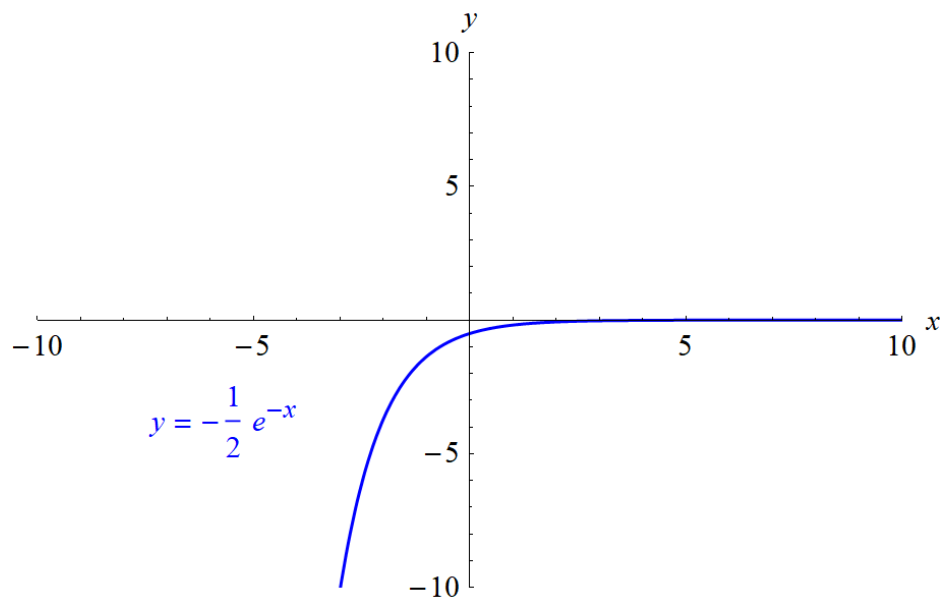
Place a minus sign in front to reflect the graph over the  $x$ -axis.

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



Place a factor of  $1/2$  in front to compress the graph vertically by a factor of 2.

$$y = -\frac{1}{2}e^{-x}$$



Add 1 to this function to shift the graph up by 1 unit vertically.

$$y = 1 - \frac{1}{2}e^{-x}$$

