4.2 Exponential Functions

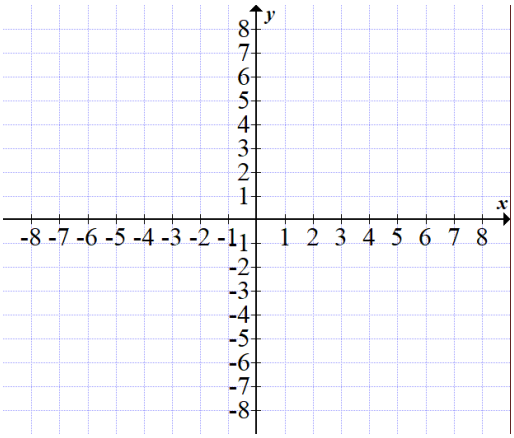
CLASSROOM EXAMPLE 1 Evaluating an Exponential Expression

For $f(x) = 4^x$, find each of the following.

(a) $f(-2)$ **(b)** $f(5)$ **(c)** $f\left(\frac{2}{3}\right)$ **(d)** $f(2.15)$

CLASSROOM EXAMPLE 2 Graphing an Exponential Function

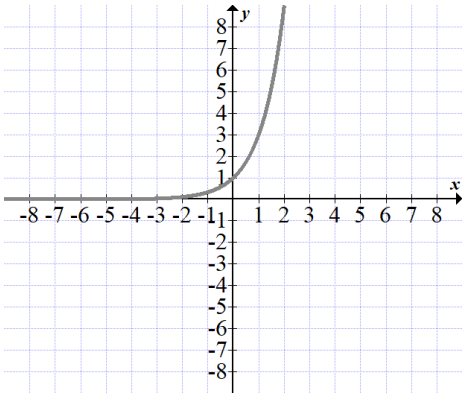
Graph $f(x) = \left(\frac{1}{2}\right)^x$. Give the domain and range.

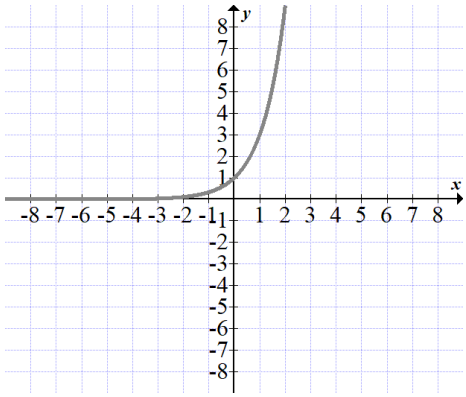


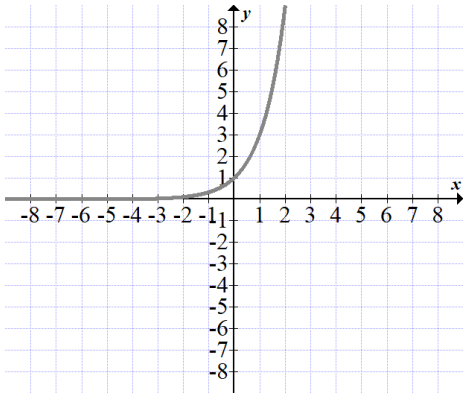
CLASSROOM EXAMPLE 3 Graphing Reflections and Translations

Graph each function. Show the graph of $y = 3^x$ for comparison. Give the domain and range.

(a) $f(x) = -3^x$ **(b)** $f(x) = 3^{x-2}$ **(c)** $f(x) = 3^{x+2} - 2$







CLASSROOM EXAMPLE 4 Solving an Exponential Equation

Solve $5^x = \frac{1}{125}$.

CLASSROOM EXAMPLE 5 Solving an Exponential Equation

Solve $3^{x+1} = 9^{x-3}$.

Continuous Compounding

If P dollars are deposited at a rate of interest r compounded continuously for t years, then the compound amount A in dollars on deposit is given by the following formula.

$$A = Pe^{rt}$$

CLASSROOM EXAMPLE 9 Solving a Continuous Compounding Problem

Suppose \$8000 is deposited in an account paying 5% interest compounded continuously for 6 yr. Find the total amount on deposit at the end of 6 yr.