

Chapter 6 Prerequisite Skills

BLM 6-1

Graph an Exponential Function

- Consider the function $y = 2(3^x)$.
 - Sketch a graph of the function.
 - State the domain, the range, and the equation of the asymptote.
- The value of a car depreciates according to the formula $V = 23(0.8)^t$, where V is the value of the car, in thousands of dollars, and t is time, in years.
 - Calculate the original value of the car.
 - Use the formula to calculate the value of the car after 3 years.

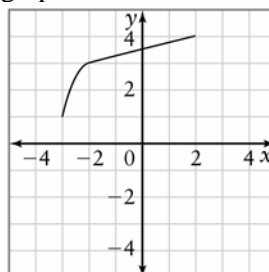
Apply the Exponential Laws

- Simplify. Express your answers using only positive exponents.
 - $\frac{p^6 p^{-2}}{p^3}$
 - $(n^4)^2 \times (n^3)^{-2}$
 - $(3x^2)^3 \div (3x)^2$
 - $\frac{64m^4 n^6}{16m^{-2} n^8}$
- Simplify first, then evaluate. Avoid using a calculator.
 - $(3^{20})(3^{-18})$
 - $\frac{\left(\left(\frac{2}{5}\right)^4 \left(\frac{2}{5}\right)^3\right)}{\left[\left(\frac{2}{5}\right)^2\right]^4}$
 - $\frac{2^{-3} + 2^0}{2^{-3} - 2^0}$

Graph an Inverse

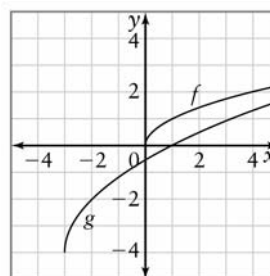
- Graph the function $f(x) = (x+3)^2$.
 - State the domain and the range of f .
 - Graph $y = f^{-1}(x)$ by reflecting the graph of f in the line $y = x$.
 - State the domain and range of f^{-1} .
 - Explain whether f^{-1} is a function or not.

- Repeat question 5 for the function whose graph is shown below.

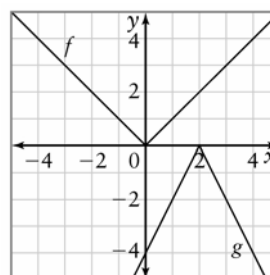


Apply Transformations to Functions

- Identify the transformations required to transform f onto g in each.



b)



- Consider the function $y = 3^x$.
 - List the transformations, in the proper order, required to transform the graph of $y = 3^x$ into the graph of $f(x) = \frac{1}{3}(3)^{-(x+2)}$.
 - Use your answer to part a) to sketch the graph of $f(x) = \frac{1}{3}(3)^{-(x+2)}$.
 - Check your answer using technology.