

## 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.

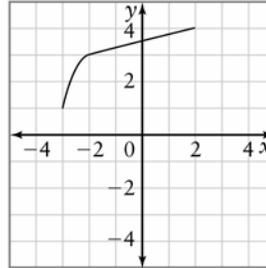
## Apply the Exponential Laws

- 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

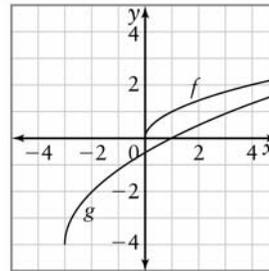
- Graph the function  $f(x) = (x+3)^2$ .
  - State the domain and the range of  $f$ .
  - Graph  $y = f^{-1}(x)$  by reflecting the graph of  $f$  in the line  $y = x$ .
  - State the domain and range of  $f^{-1}$ .
  - Explain whether  $f^{-1}$  is a function or not.

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

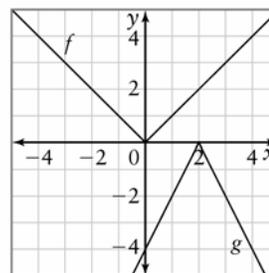


## Apply Transformations to Functions

- 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.