## **Evaluating Logarithms**

### Example

- (a) Suppose  $y = \log_3 x$ . What values of x give  $0 \le y \le 1$ ? (State your answer in interval notation.)
- (b) What is the value of  $\log_2 42$ ?
- (c) What is the value of  $\log_5 52$ ?

## Solving Logarithmic Equations

#### Example

Solve the following logarithmic equations.

(a) 
$$\log_x \frac{8}{27} = 3$$

(b) 
$$\log_{16} x = \frac{3}{2}$$

(c) 
$$\ln x - \ln(x - 1) = 1$$

# Solving Exponential Equations

Example Solve  $3^x = 2^{2x+1}$ 

# Change-of-Base Theorem for Exponentials

Example

Solve  $e^{2x \ln 3} = 3^{x+1}$  and simplify your answer.

### **Doubling Time**

#### Example

A \$1000 deposit is made into an account which earns 6% interest compounded semiannually. How long will it take for this amount to double to \$2000? Assume that no deposits nor withdrawals will be made from this account during this time. (Leave your answer in logarithmic form.)

## **Domain and Range**

#### Example

Find the domain and range of the following functions.

- (a)  $f(x) = e^{-2x}$
- (b)  $g(x) = -2e^x$
- (c)  $h(x) = \ln(-2x)$
- (d)  $y = -2 \ln x$