

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Learning Goal 8.1**Solving exponential and logarithmic equations with same base and with different bases, including base  $e$ .

Power Law	Product Law	Quotient Law	Change of Base

**Example** Solve for  $x$ .

a.  $2^x = 2^{x^2}$

b.  $64^{3x-1} = \left(\frac{1}{16}\right)^{2x+4}$

**Example** Solve for  $x$ . Round your answers to the nearest hundredth.

a.  $2^x = 5$

b.  $4^{2x-3} = 3^{x+2}$

**Example** Solve and check.

$$3(2^{2x-1}) = 6^x$$

**Example** A car was purchased for \$15 000. The value of the car depreciates 15% of its previous value each year. To the nearest tenth of a year, how long will it take before it is worth only \$9 000?

**Example** A radioactive material has a half – life of 80 months. What percent of the sample is left after 48 months?