Algebra: Solving Log Equations (Properties)

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DIRECTIONS *Apply Product, Quotient, or Power Rules to solve each logarithmic equation for x.*

1 Solve using the Quotient Rule:

$$\log_{10} 32 - \log_{10} 4 = \log_{10} x$$

Answer: _____

2 Apply the Power Rule and simplify:

$$\log_3 4^2$$

Answer: _____

3 Apply the Power Rule and simplify:

$$\log_5 5^2$$

Answer: _____

4 Solve using the Quotient Rule:

$$\log_2 24 - \log_2 3 = \log_2 x$$

Answer: _____

5 Apply the Power Rule and simplify:

$$\log_5 5^2$$

Answer: _____

6 Apply the Power Rule and simplify:

$$\log_2 2^3$$

Answer: _____

7 Solve using the Quotient Rule:

$$\log_2 32 - \log_2 4 = \log_2 x$$

Answer: _____

8 Solve using the Product Rule:

$$\log_2 x + \log_2 4 = 3$$

Answer: _____

9 Solve using the Quotient Rule:

$$\log_2 6 - \log_2 1 = \log_2 x$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES *Product Rule: log(AB)=log A+log B. Quotient Rule: log(A/B)=log A–log B. Check domain!*

1 Solve using the Quotient Rule:

$$\log_{10} 32 - \log_{10} 4 = \log_{10} x$$

=

$$x = 8$$

2 Apply the Power Rule and simplify:

$$2 \cdot \log_3 4$$

=

$$\log_3 4^2$$

3 Apply the Power Rule and simplify:

$$2 \cdot \log_5 5$$

=

$$\log_5 5^2$$

4 Solve using the Quotient Rule:

$$\log_2 24 - \log_2 3 = \log_2 x$$

=

$$x = 8$$

5 Apply the Power Rule and simplify:

$$2 \cdot \log_5 5$$

=

$$\log_5 5^2$$

6 Apply the Power Rule and simplify:

$$3 \cdot \log_2 2$$

=

$$\log_2 2^3$$

7 Solve using the Quotient Rule:

$$\log_2 32 - \log_2 4 = \log_2 x$$

=

$$x = 8$$

8 Solve using the Product Rule:

$$\log_2 x + \log_2 4 = 3$$

=

$$x = 2$$

9 Solve using the Quotient Rule:

$$\log_2 6 - \log_2 1 = \log_2 x$$

=

$$x = 6$$