Algebra: Properties of Logarithms

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Name: _____ Date: _____ Score: / 10

DIRECTIONS *Evaluate or simplify using Product, Quotient, and Power Rules of logarithms.*

1 Evaluate:

$$\log_{10} 1000$$

Answer: _____

2 Apply log properties to simplify:

$$b^{\log_b 5}$$

Answer: _____

3 Apply log properties to simplify:

$$\log_b b^7$$

Answer: _____

4 Apply log properties to simplify:

$$\log_b 1$$

Answer: _____

5 Evaluate:

$$\log_2 1$$

Answer: _____

6 Evaluate:

$$\log_5 125$$

Answer: _____

7 Evaluate:

$$\log_7 7$$

Answer: _____

8 Apply log properties to simplify:

$$\log_{10} 10^x$$

Answer: _____

9 Evaluate:

$$\log_2 32$$

Answer: _____

10 Evaluate:

$$\ln e^5$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES *Key values: log_b(1)=0, log_b(b)=1, log_b(b^n)=n. These appear frequently on exams.*

1 Evaluate:

$\log_{10} 1000$

= 3

2 Apply log properties to simplify:

$b^{\log_b 5}$

= 5

3 Apply log properties to simplify:

$\log_b b^7$

= 7

4 Apply log properties to simplify:

$\log_b 1$

= 0

5 Evaluate:

$\log_2 1$

= 0

6 Evaluate:

$\log_5 125$

= 3

7 Evaluate:

$\log_7 7$

= 1

8 Apply log properties to simplify:

$\log_{10} 10^x$

= x

9 Evaluate:

$\log_2 32$

= 5

10 Evaluate:

$\ln e^5$

= 5