Algebra: Graphing Logarithmic Functions

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Name: _____ Date: _____ Score: / 10

DIRECTIONS *For each function, state the domain, range, asymptote, or identify key points.*

1 Vertical asymptote:

$$f(x) = \log_4 x$$

Answer: _____

2 State the range:

$$f(x) = \log_2 x + 2$$

Answer: _____

3 Vertical asymptote:

$$f(x) = \ln x$$

Answer: _____

4 Evaluate one point:

$$f(x) = \log_2 (x + 3)$$

Answer: _____

5 x-intercept:

$$f(x) = \log_2 x - 3$$

Answer: _____

6 State the range:

$$f(x) = \log_{10} x$$

Answer: _____

7 Evaluate one point:

$$f(x) = \log_3 x$$

Answer: _____

8 State the domain:

$$f(x) = -\log_2 x$$

Answer: _____

9 State the range:

$$f(x) = \log_2 x$$

Answer: _____

10 Vertical asymptote:

$$f(x) = \log_2 (x - 2)$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES *Vertical asymptote shifts with horizontal translation. Range is always all real numbers.*

1 Vertical asymptote:

= $x = 0$

$f(x) = \log_4 x$

2 State the range:

= $(-\infty, \infty)$

$f(x) = \log_2 x + 2$

3 Vertical asymptote:

= $x = 0$

$f(x) = \ln x$

4 Evaluate one point:

= $(-1,\ 1)$

$f(x) = \log_2 (x + 3)$

5 x-intercept:

= $(1,\ -3)$

$f(x) = \log_2 x - 3$

6 State the range:

= $(-\infty, \infty)$

$f(x) = \log_{10} x$

7 Evaluate one point:

= $(3,\ 1)$

$f(x) = \log_3 x$

8 State the domain:

= $x > 0$

$f(x) = -\log_2 x$

9 State the range:

= $(-\infty, \infty)$

$f(x) = \log_2 x$

10 Vertical asymptote:

= $x = 2$

$f(x) = \log_2 (x - 2)$