

The Essential Properties of Logarithm and Natural Logarithm in Pre-Calculus

4.3

Lesson 217 | Precalculus | Logarithms and their properties

<https://www.youtube.com/watch?v=2GbqFcIRWUk>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Graph $y = \log_5(x - (-5)) + 7$. Give domain, vertical asymptote, and two exact points.

02

For positive x and y , expand $\log_7(14x^8/y^{12})$.

03

For positive x and y , expand $\log_7(4x^8/y^5)$.

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04

Graph $y = \log_4(x - (-2)) + 9$. Give domain, vertical asymptote, and two exact points.

05

For positive x and y , expand $\log_4(3x^{11}/y^9)$.

06

For positive x and y , expand $\log_2(11x^2/y^4)$.

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01

Graph $y = \log_5(x - (-5)) + 7$. Give domain, vertical asymptote, and two exact points.

Argument must be positive: $x > -5$. Asymptote $x = -5$. Since $\log_5(1)=0$ and $\log_5(5)=1$, points are $(-4, 7)$ and $(0, 8)$.

02

For positive x and y , expand $\log_7(14x^8/y^{12})$.

Use product, quotient, and power rules: $\log_7(14) + 8\log_7(x) - 12\log_7(y)$.

03

For positive x and y , expand $\log_7(4x^8/y^5)$.

Use product, quotient, and power rules: $\log_7(4) + 8\log_7(x) - 5\log_7(y)$.

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04

Graph $y = \log_4(x - (-2)) + 9$. Give domain, vertical asymptote, and two exact points.

Argument must be positive: $x > -2$. Asymptote $x = -2$. Since $\log_4(1)=0$ and $\log_4(4)=1$, points are $(-1, 9)$ and $(2, 10)$.

05

For positive x and y , expand $\log_4(3x^{11}/y^9)$.

Use product, quotient, and power rules: $\log_4(3) + 11\log_4(x) - 9\log_4(y)$.

06

For positive x and y , expand $\log_2(11x^2/y^4)$.

Use product, quotient, and power rules: $\log_2(11) + 2\log_2(x) - 4\log_2(y)$.