Watch. Practice. Understand. | Lesson 210

Pre Cal 4 2 Graphing Logarithmic Functions and Conversion Between Log and Exponenti...

Watch the matching video: https://www.youtube.com/watch?v=dCfWi2z7AjY

Practice focus: Logarithms and their properties

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Evaluate log base 2 of 32 and $\ln(e^3)$.

02 Expand $\ln(x^2\sqrt{y/z})$, assuming $x, y, z > 0$.

03 Condense $2 \log x - \log 3$, for $x > 0$.

04 Express log base 5 of 17 using natural logarithms.

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Practice focus: Exponential functions and models

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

05 Solve 3^(x + 1) = 81.

06 A population starts at 500 and doubles every 3 hours. Find its size after 9 hours.

07 An item worth $800 loses 15% of its value per year. Find its value after 2 years.

08 Find the y-intercept, horizontal asymptote and range of y = 2^x - 3.

Worked answers | Lesson 210

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01 Evaluate log base 2 of 32 and $\ln(e^3)$.

$2^5 = 32$, so the first value is 5; $\ln(e^3) = 3$.

02 Expand $\ln(x^2\sqrt{y}/z)$, assuming $x, y, z > 0$.

$2 \ln x + (1/2) \ln y - \ln z$, using product, quotient and power rules.

03 Condense $2 \log x - \log 3$, for $x > 0$.

$\log(x^2) - \log 3 = \log(x^2/3)$.

04 Express log base 5 of 17 using natural logarithms.

Change of base: $\ln(17)/\ln(5)$, approximately 1.7604.

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05 Solve 3^(x + 1) = 81.

81 = 3^4, so x + 1 = 4 and x = 3.

06 A population starts at 500 and doubles every 3 hours. Find its size after 9 hours.

P(t) = 500(2)^(t/3). P(9) = 500(8) = 4000.

07 An item worth $800 loses 15% of its value per year. Find its value after 2 years.

V = $800(0.85)^2$ = $578.

08 Find the y-intercept, horizontal asymptote and range of y = 2^x - 3.

At x = 0, y = -2. Asymptote y = -3; range (-3, infinity).