

Pre-Cal 4.4 Solving Exponential and Logarithmic Equations

Lesson 100 | Algebra II | Exponential and logarithmic equations

<https://www.youtube.com/watch?v=buLEZ-ckILI>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Solve $7^{(4x - 6)} = 5764801$.

02

Solve $\log_4(x - 13) = 3$. State the domain and check.

03

Solve $\log_6(x - 6) = 5$. State the domain and check.

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04 Solve $4^{(8x - 13)} = 16$.

05 Solve $\log_3(x - 6) = 4$. State the domain and check.

06 Solve $\log_6(x - 3) = 7$. State the domain and check.

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01

Solve $7^{(4x - 6)} = 5764801$.

Write the right side as 7^8 ; equal bases give $4x - 6 = 8$. Thus $x = 7/2$.

02

Solve $\log_4(x - 13) = 3$. State the domain and check.

Domain $x > 13$. Convert to exponential form: $x - 13 = 4^3$, so $x = 77$. The positive argument 64 satisfies the domain.

03

Solve $\log_6(x - 6) = 5$. State the domain and check.

Domain $x > 6$. Convert to exponential form: $x - 6 = 6^5$, so $x = 7782$. The positive argument 7776 satisfies the domain.

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04

Solve $4^{(8x - 13)} = 16$.

Write the right side as 4^2 ; equal bases give $8x - 13 = 2$. Thus $x = 15/8$.

05

Solve $\log_3(x - 6) = 4$. State the domain and check.

Domain $x > 6$. Convert to exponential form: $x - 6 = 3^4$, so $x = 87$. The positive argument 81 satisfies the domain.

06

Solve $\log_6(x - 3) = 7$. State the domain and check.

Domain $x > 3$. Convert to exponential form: $x - 3 = 6^7$, so $x = 279939$. The positive argument 279936 satisfies the domain.