Questions: Solving exponential equations

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Summary

A selection of questions for the study guide on solving equations involving indices.

Before attempting these questions, it is highly recommended that you read Guide: Solving exponential equations.

Solve each of the exponential equations below for the variable in the equation. If an equation has more than one variable, solve for the variable stated.

1. $\sqrt[4]{m-4} = 5$

2. $x^4 = 2^8$

3. $11^x = 121^{(x-1)}$

4. $y^{0.5} = 23$

5. $8^{2-x} = 2^{4+3x}$

6. $2^{3x} = 10$

7. $5^{3-a} = 625$

8. $16^{2x} = 4^{x-1}$

9. $7^{2-x} = 4^{2x+3}$

10. $16 = 8^{3-7x}$

11. $e^{3-8p} - 9 = 0$

12. $e^{4-3q} + 8 = 12$

13. $\sqrt[3]{2^{4l} - 4} = 5$

14. $\sqrt[3]{e^{2h} - 13} = 81^{\frac{1}{4}}$

15. $\dfrac{5xa^{-7}b^9}{9a^2b^{-10}} = \dfrac{25b^{19}}{3a^9}$, solve for x.

16. $4^x \cdot 2^x = 64$

17. $\dfrac{5^{x+1} \cdot 6^{x+1}}{3^{x+1}} = 100$

18. $\dfrac{\left[\left(\frac{1}{2}\right)^x \cdot \left(\frac{-1}{4}\right)^x\right]}{\left(\frac{2}{3}\right)^x} = -\dfrac{27}{4096}$

19. $3^{b+1} = 7^b$

20. $5^{x+1} + 5^x = 12$

21. $2^{3z-1} = 10^z$

22. $2^{2v} - 2^{v+3} - 2^4 = 0$

After attempting the questions above, please click this link to find the answers.

Version history and licensing

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- v1.1: edited 05/24 by tdhc.