

3-4 Exponential and Logarithmic Equations

Solve each equation.

2. $8^{x+4} = 32^{3x}$

ANSWER:

1

4. $32^{x-1} = 4^{x+5}$

ANSWER:

5

6. $12^{3x+11} = 144^{2x+7}$

ANSWER:

-3

8. $\left(\frac{5}{6}\right)^{4x} = \left(\frac{36}{25}\right)^{9-x}$

ANSWER:

-9

Solve each logarithmic equation.

12. $-8 \log b = -64$

ANSWER:

100,000,000

14. $2 + 3 \log 3d = 5$

ANSWER:

$\frac{10}{3} \approx 3.33$

16. $100 + 500 \log_4 g = 1100$

ANSWER:

16

18. $-18 \log_0 j = -126$

ANSWER:

no solution

20. $\log_2 m^4 = 32$

ANSWER:

± 256

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Solve each equation.

22. $\log_6 (x^2 + 5) = \log_6 41$

ANSWER:

± 6

24. $\log_9 (x^4 - 3) = \log_9 13$

ANSWER:

± 2

26. $\log_5 x = \log_5 (x + 6) - \log_5 4$

ANSWER:

2

Solve each equation. Round to the nearest hundredth.

28. $6^x = 28$

ANSWER:

1.86

30. $3e^{4x} = 45$

ANSWER:

0.68

32. $8^x - 1 = 3.4$

ANSWER:

0.71

34. $8.3e^{9x} = 24.9$

ANSWER:

0.12

36. $2.5e^{x+4} = 14$

ANSWER:

-2.28