

DIRECTIONS: Solve the following equations for the variable x .

1. $\log_a x = \frac{3}{2} \log_a 9 + \log_a 2$
 $x = 54$

2. $\log_b(x^2 + 7) = \frac{2}{3} \log_b 64$
 $x = \pm 3$

3. $\log_a(3x + 5) - \log_a(x - 5) = \log_a 8$
 $x = 9$

4. $\log_3(x + 2) + \log_3 6 = 3$
 $x = \frac{5}{2}$

DIRECTIONS: Solve each equation. If needed, round to three decimal places.

5. $5^t = 10$
 $t \approx 1.431$

6. $5.6^x = 56$
 $x \approx 2.337$

7. $12^{2x} = 1000$
 $x \approx 1.390$

8. $3.5^{2t} = 60$
 $t \approx 1.634$

DIRECTIONS: Solve each equation *without* using a calculator or logarithms.

9. $3^x = \sqrt[5]{9}$
 $x = \frac{2}{5}$

10. $125^x = 25\sqrt{5}$
 $x = \frac{5}{6}$

DIRECTIONS: Solve each equation. If needed, round to three decimal places.

11. $x^{2/3} = 50$
 $x \approx 353.553$

12. $\sqrt[3]{x^4} = 60$
 $x \approx 21.558$

13. $\frac{\sqrt[5]{x}}{9} = 7$
 $x = 992,436,543$

14. $(3y - 1)^6 = 80$
 $y \approx 1.025$