

Pre-Calculus
Solving exponential and logarithmic equations

Name _____

Per _____

Solve.

1. $2^x = 8$

2. $2^x = 32$

3. $2^x = 10$

4. $2^x = 33$

5. $5^{4x-7} = 125$

6. $4^{3x+5} = 16$

7. $3^{x+4x} = \frac{1}{27}$

8. $3^{5x} \cdot 9^{x^2} = 27$

9. $4^x = 7$

10. $8^x = 10$

11. $2^x = 3^{x-1}$

12. $3^{x+2} = 5^{x-1}$

13. $(2.8)^x = 41$

14. $(3.4)^x = 80$

15. $(1.7)^x = 20$

16. $\log x + \log(x-9) = 1$

17. $\log x + \log(x+9) = 1$

18. $\log x - \log(x+3) = -1$

19. $\log(x+9) - \log x = 1$

20. $\log_4(x+3) + \log_4(x-3) = 2$

21. $\log_5(x+4) + \log_5(x-4) = 2$

22. $\log_3 \sqrt[3]{x} = \sqrt{\log x}$

23. $\log_4 \sqrt[4]{x} = \sqrt{\log x}$

24. $\log_5 \sqrt{x^2+1} = 1$

25. $\log \sqrt[3]{x^2} + \log \sqrt[3]{x^4} = \log 2^{-3}$

26. $\log \sqrt{x} = \sqrt{\log x}$

27. $\log_5 \sqrt{x^2+1} = 2$

28. $(\log_a x)^{-1} = \log_a x^{-1}$

29. $|\log_5 x| = 2$

30. $\log_3 |x| = 2$

31. $\log x^{\log x} = 4$

$$32. \frac{\sqrt{(a^{2x} \cdot a^{-5x})^{-4}}}{a^x \div a^{-x}} = a^7$$

$$33. \frac{(a^{3x+1})^2}{a^4} = a^{10x}$$

34. Solve $y = ax^n$, for n . Use \log_x .

35. Solve $y = kb^{at}$, for t . Use \log_b .

36. Solve $T = T_0 + (T_1 - T_0) 10^{-kt}$, for t .

37. Solve $PV^n = c$, for n . Use \log_V .

38. Solve $\log_a Q = \frac{1}{3} \log_a y + b$, for Q .

39. Solve $\log_a y = 2x + \log_a x$, for y .

40. How many years will it take an investment of \$1000 to double itself when interest is compounded annually at 6%?

41. How many years will it take an investment of \$1000 to triple itself when interest is compounded annually at 5%?