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Solve for x.

21. $\log_2 x = \log_2 5 + \log_2 3$

22. $\log_2 x = \log_2 18 - \log_2 6$

23. $\log x + \log 12 = \log 8$

24. $\log x = 1 + \log 2$

25. $4\log_5 x = \log_5 625$

40. Find the roots of each equation. Remember to check for restrictions and reject inadmissible roots.

a) $\log_2(x-2) + \log_2 x = \log_2 3$

b) $\log_2(x-2) + \log_2 x = 3$

c) $\log_5(3x+1) + \log_5(x-3) = 3$

d) $\log_9(x-5) = 1 - \log_9(x+3)$

e) $\log_2(x^2+8) - \log_2 6 = \log_2 x$

f) $\log(2x+1) = 1 + \log(x-2)$

g) $\log_3(x-2) + \log_3 10 - \log_3(x^2+3x-10) = 0$

h) $(\log_3 x)^2 = \log_3 x^2 + 3$

Section 2.7 pp. 113–115
Practice **1.** 4.39 **2.** 4.85 **3.** 0.98 **4.** −0.06 **5.** −0.68 **6.** −2.58 **7.** −4.32 **8.** ±1.82 **9.** 0.972 **10.** 1.684 **11.** 5.060 **12.** 0.502 **13.** 5.637 **14.** 3.538 **Estimates may vary for 15.–20. 15.** 4; 4.08 **16.** 3.1; 3.25 **17.** 4.25; 4.30 **18.** 3.1; 3.08 **19.** 2.25; 2.19 **20.** 3.1; 3.05 **21.** 15 **22.** 3 **23.** $\frac{2}{3}$ **24.** 20 **25.** 5 **26.** 6.1 years **27.** 5.8 years **28.** 9.7 years **29.** 9.2 years **30.** $V(t) = 12\,500(0.85)^t$ **31.** 4.3 years **32.** 13.0 years **Applications and Problem Solving** **40. a)** 3 **b)** 4 **c)** 8 **d)** 6 **e)** 2, 4 **f)** $\frac{21}{8}$ **g)** 5 **h)** $\frac{1}{3}$, 27 **41.** The value of y at $x = 4$ should be 1. Test $x = 1$. **42.** 57 months **43.** 2 days **44. a)** 0.81 **b)** 0.65 h **c)** 0.41 h ago