

7.6 Homework

Name _____

4-18 Even, 24-42 even, 54, 57

(4-18) Solve the equation.

4) $7^{3x+4} = 49^{2x+1}$

6) $27^{4x-1} = 9^{3x+8}$

8) $3^{3x-7} = 81^{12-3x}$

10) $10^{3x-10} = \left(\frac{1}{100}\right)^{6x-1}$

12) $8^x = 20$

14) $7^{3x} = 18$

16) $7^{6x} = 12$

18) $10^{3x} + 4 = 9$

SOLVE LOGARITHMIC EQUATIONS (24-30) Solve the equation. Check for extraneous solutions.

24) $\log_5(5x+9) = \log_5 6x$

26) $\ln(x+19) = \ln(7x-8)$

28) $\log(12x-11) = \log(3x+13)$

30) $\log_6(3x-10) = \log_6(14-5x)$

EXPONENTIATING LOGARITHMIC EQUATIONS (32-42) Solve the equation. Check for extraneous solutions.

32) $\log_4 x = -1$

34) $\frac{1}{3}\log_5 12x = 2$

36) $\log_2(x-4) = 6$

38) $\log_4(-x) + \log_4(x+10) = 2$

40) $4\ln(-x) + 3 = 21$

42) $\log_6 3x + \log_6(x-1) = 3$

54) You are cooking beef stew. When you take the beef stew off the stove, it has a temperature of 200 degrees F. The room temperature is 75 degrees F and the cooling rate of the beef stew is $r=0.054$. How long (in minutes) will it take to cool the beef stew to a serving temperature of 100 degrees F? (hint: use your notes for Newton's Law of Cooling)

57) One hundred grams of radium are stored in a container. The amount R (in grams) of radium present after t years can be modeled by $R = 100e^{-0.00043t}$. After how many years will only 5 grams of radium be present?