

16.2 Solving Exponential and Logarithmic equations

SOLVING EXPONENTIAL EQUATIONS Solve the equation.

25. $10^{x-3} = 100^{4x-5}$

28. $36^{x-9} = 6^{2x}$

31. $2^x = 15$

34. $-5e^{-x} + 9 = 6$

37. $\frac{1}{4}(4)^{2x} + 1 = 5$

40. $4 - 2e^x = -23$

26. $25^{x-1} = 125^{4x}$

29. $8^{5x} = 16^{3x+4}$

32. $1.2e^{-5x} + 2.6 = 3$

35. $10^{2x} + 3 = 8$

38. $\frac{2}{3}e^{4x} + \frac{1}{3} = 4$

41. $3^{0.1x} - 4 = 5$

27. $3^{x-7} = 27^{2x}$

30. $e^{-x} = 6$

33. $4^x - 5 = 3$

36. $0.25^x - 0.5 = 2$

39. $10^{-12x} + 6 = 100$

42. $-16 + 0.2(10)^x = 35$

SOLVING LOGARITHMIC EQUATIONS Solve the equation. Check for extraneous solutions.

43. $\ln(4x+1) = \ln(2x+5)$

45. $4 \log_3 x = 28$

47. $\frac{1}{2} \log_6 16x = 3$

49. $2 \ln(-x) + 7 = 14$

51. $\ln x + \ln(x-2) = 1$

53. $\log_8(11-6x) = \log_8(1-x)$

55. $-5 + 2 \ln 3x = 5$

57. $6.5 \log_5 3x = 20$

59. $\ln(5.6-x) = \ln(18.4-2.6x)$

44. $\log_2 x = -1$

46. $16 \ln x = 30$

48. $1 - 2 \ln x = -4$

50. $\log_5(2x+15) = \log_5 3x$

52. $\ln x + \ln(x+3) = 1$

54. $15 + 2 \log_2 x = 31$

56. $\log(5-3x) = \log(4x-9)$

58. $\ln(x+5) = \ln(x-1) - \ln(x+1)$

60. $10 \ln 100x - 3 = 117$