

DUE: A-day Tuesday 12/10/15, B-day Monday 12/09/15

Pre-Calculus: Lesson 3.3 Properties of Logs p. 207 #47-63 odd, #69-83 odd.

Please complete the assignment using the "tri-fold" method (You may use www.calcchat.com to check your work):

Expanding Logarithmic Expressions In Exercises 47–64, use the properties of logarithms to expand the expression as a sum, difference, and/or constant multiple of logarithms. (Assume all variables are positive.)

47. $\log_{10} 5x$

48. $\log_{10} 10z$

49. $\log_{10} \frac{t}{8}$

50. $\log_{10} \frac{7}{z}$

51. $\log_8 x^4$

52. $\log_6 z^{-3}$

53. $\ln \sqrt{z}$

54. $\ln \sqrt[3]{t}$

55. $\ln xyz$

56. $\ln \frac{xy}{z}$

57. $\log_6 ab^3c^2$

58. $\log_4 xy^6z^4$

59. $\ln \sqrt[3]{\frac{x}{y}}$

60. $\ln \sqrt{\frac{x^2}{y^3}}$

61. $\ln \frac{x^2 - 1}{x^3}, \quad x > 1$

62. $\ln \frac{x}{\sqrt{x^2 + 1}}$

63. $\ln \frac{x^4 \sqrt{y}}{z^5}$

64. $\log_b \frac{\sqrt{xy^4}}{z^4}$

Condensing Logarithmic Expressions In Exercises 69–84, condense the expression to the logarithm of a single quantity.

69. $\ln x + \ln 4$

70. $\ln y + \ln z$

71. $\log_4 z - \log_4 y$

72. $\log_5 8 - \log_5 t$

73. $2 \log_2(x + 3)$

74. $\frac{5}{2} \log_7(z - 4)$

75. $\frac{1}{2} \ln(x^2 + 4)$

76. $2 \ln x + \ln(x + 1)$

77. $\ln x - 3 \ln(x + 1)$

78. $\ln x - 2 \ln(x + 2)$

79. $\ln(x - 2) - \ln(x + 2)$

80. $3 \ln x + 2 \ln y - 4 \ln z$

81. $\ln x - 2[\ln(x + 2) + \ln(x - 2)]$

82. $4[\ln z + \ln(z + 5)] - 2 \ln(z - 5)$

83. $\frac{1}{3}[2 \ln(x + 3) + \ln x - \ln(x^2 - 1)]$