**LOGS AND LNS PRACTICE ANSWERS**

**Convert to exponential form:**

1. $2^5 = 32$
2. $10^{0.845} = 7$
3. $6^1 = 6$
4. $3^4 = 81$
5. $5^3 = 125$
6. $a^y = x$
7. $r^{-x} = M$
8. $e^3 = 20.1$
9. $e^1 = e$
10. $e^4 = 54.6$
11. $e^{0.69} = 2$
12. $e^y = x$

**Convert to logarithmic form:**

13. $\log \quad 100 = 2$
14. $\log_2 16 = 4$
15. $\log_3 9 = 2$
16. $\log_a b = x$
17. $\log_b a = (x + y)$
18. $\log_3 \frac{1}{9} = -2$
19. $\ln 0.018 = -4$
20. $\ln t = 7$
21. $\log_x 4 = 6$
22. $\log_6 36 = x$
23. $\log_y(a + b) = 7$
24. $\log_4 \frac{1}{4096} = -6$

**Solve for x:**

25. 8
26. 65536
27. 4
28. 5
29. 2
30. 8
31. 18
32. 9
33. 100
34. 200

**Express as a product:**

35. $a \log_x B$
36. $5 \log_x y$
37. $7\log_5 6$
38. $x \log_2 4$
39. $4 \ln e$

**Express as a logarithm with an exponent:**

40. $\log_a B^x$
41. $\log_5 x^4$
42. $\log_7 3^2$
43. $\ln e^2$

**Express as 2 logarithms:**

44. $\log_a B + \log_a C$
45. $\log_2 3 + \log_2(4x)$
46. $\log_5(7) + \log_5(2)$
47. $\log_3(81) + \log_3(27)$
48. $\log_a(y) + \log_a(x^2)$
49. $\log_a B - \log_a C$
50. $\log_4 9 - \log_4 7$
51. $\log_x 31 - \log_x 221$
52. $\log_7 19 - \log_7 94$
53. $\ln 4x - \ln 3$

**Simplify into a single logarithm:**

54. $\log_a(B \cdot C)$
55. $\log_a \frac{B}{C}$
56. $\log_6 120$
57. $\log_2 \frac{19}{3}$
58. $\log_{12} 8$
59. $\log_7 \frac{5}{17}$
60. $\ln \frac{3}{7}$
61. $\ln(13.57)$
62. $\log_x \frac{2^3}{4^2}$
63. $\log_x(4^{2/3} \cdot 9^{1/4} \cdot 6^{-1/2})$
64. $\log_x \frac{2^y}{9^y}$
65. $\log_x(\frac{1}{y+2})$
66. $\log_x \frac{(x-3)^2}{x^2+4x+3}$
67. $\log_a(\frac{2x^6}{y^5})$