Topic 9: Exponential and Logarithmic Equations

Questions 1 – 12 Solve the equation for x.
1. \(5^x = 1\)
2. \(\frac{1}{8} = \left(\frac{1}{2}\right)^x\)
3. \(32^x = 2\)
4. \(7^{4x+1} = 7^3\)
5. \(10^4 = \frac{1}{10^x}\)
6. \(25 = x^2\)
7. \(x^3 = 27\)
8. \(10^{3x+7} = 1\)
9. \(8^{2x-1} = 64\)
10. \(5^3 = \frac{1}{5^{x-1}}\)
11. \(e^x = 6\) Express final answer as a simplified logarithmic expression.
12. \(3^x = 4\) Express final answer as a simplified logarithmic expression.

Questions 13 – 20 Solve the equation for x.
13. \(\log x = 6\)
14. \(\log_{1/5} x = -3\)
15. \(\log_2 16 = x\)
16. \(\log_x e^2 = 2\)
17. \(\log_x 10^9 = 9\)
18. \(\log_{1/4} 4^5 = x\)
19. \(\log_3 (x - 10) = 2\)
20. \(\log_8 (2x + 3) = \log_8 15\)