Exponentials and Logarithms

Solve for y.

1. $y = \log_3(27)$
2. $y = \log_4(1/8)$
3. $y = \log_{16}(4)$
4. $\log_y(64) = 3$

Write each of the following in terms of logs of x, y and z.

5. $\log x^2y$
6. $\log\left(\frac{xy}{x}\right)$
7. $\log(xz)^{1/2}$
8. $\log\sqrt{\frac{xy^3}{z^2}}$

Solve each equation.

9. $\log(x + 1) - \log(x - 1) = 1$
10. $2\log(x + 2) = 2$
11. $\log(2x - 1) + 2 = \log(22)$
12. $5^{x-1} = 2^{2x+1}$
13. $3^{2x} = 21$
14. $5^{3x-2} = 6^x$

Find the inverse of each of the following.

15. $f(x) = 3^x$
16. $f(x) = \log_3(x)$
17. $f(x) = -\log(2x + 1) + 1$
18. $f(x) = \ln(x + 3) - 2$

Graph each of the following on the same graph.

19. $y = x$
20. $y = 5^x$
21. $y = \log_5(x)$
22. $y = \log_5(x - 3) + 2$