Algebra 2
Playing with Logs

Name: _____
Period: _____

No Calculators!!

Rewrite in exponential or logarithmic form.

1. $\log_3 7 = x$
2. $\log_x 4 = 5$
3. $\log_9 x = 3$
4. $2\log 3 = x$
5. $3\log_4 2 = x$
6. $3^x = 4$
7. $x^4 = 9$
8. $8^{-2} = x$
9. $2^{(x+2)} = 5$
10. $6^{-3} = x$

Expand.

11. $\log_2\left(x^3yz^4\right)$
12. $\log\left(\dfrac{a^2b^5}{c^4}\right)$
13. $\log\left(\dfrac{f^{-2}g^4}{h^{\frac{1}{3}}k}\right)^2$
14. $\log_m\left(\dfrac{3w^2b^{-2}}{4}\right)$

Write as a single logarithm.

15. $\log m + \log n - \log p$
16. $2\log_3 x + 3\log_3 y - 4\log_3 z$
17. $\log x + \log(x-2)$
18. $3\log_2 x - 4\log_2\left(x^2\right)$
19. $\dfrac{1}{2}\log 25 - \dfrac{1}{3}\log 64 + \log 2$
20. $3\log_5 x + 2\log_5 x - 4\log_5(x+1)$

Solve for x.

21. $\log x = 3$
22. $\log_3(x+1) = 2$
23. $\log_4 64 = x$
24. $3^{2x} = \dfrac{1}{27}$
25. $x^{\frac{3}{2}} = 125$
26. $4\log_3 x = 20$
27. $\log_3 x - \log_3(x-1) = 2$
28. $\log_2 x + \log_2 3 = 5$
29. $2\log_4 5 + \log_4 x - \log_4(x+1) = 2$

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