College Math

Name KEY

Equations with Logs - NOTES

Date _____

Solve each equation.

1) $\log_8 x = 4$

$8^4 = x$

$4096 = x$

2) $\log_6 n = 1$

$6^1 = n$

$6 = n$

3) $\log_8 n - 10 = -7$

$+10 \quad +10$

$\log_8 n = 3$

$8^3 = n$

$512 = n$

4) $8 + \log_7 x = 8$

$-8 \quad -8$

$\log_7 x = 0$

$7^0 = x$

$1 = x$

5) $8 + \log_{11} m = 9$

$-8 \quad -8$

$\log_{11} m = 1$

$11^1 = m$

$11 = m$

6) $\frac{9\log_{11} x}{9} = \frac{36}{9}$

$\log_{11} x = 4$

$11^4 = x$

$14{,}641 = x$

7) $4 - 7\log m = 18$

$-4 \quad -4$

$\frac{-7\log m}{-7} = \frac{14}{-7}$

$\log m = -2$

$10^{-2} = m$

$.01 = m$

8) $-9 - 6\log_9 x = -21$

$+9 \quad +9$

$\frac{-6\log_9 x}{-6} = \frac{-12}{-6}$

$\log_9 x = 2$

$9^2 = x$

$81 = x$

9) $-5 + 7\log n = 9$

$+5 \quad +5$

$\frac{7\log n}{7} = \frac{14}{7}$

$\log n = 2$

$10^2 = n$

$100 = n$

10) $-6\log_3 b + 2 = 14$

$-2 \quad -2$

$\frac{-6\log_3 b}{-6} = \frac{12}{-6}$

$\log_3 b = -2$

$3^{-2} = b$

$\frac{1}{9} = b$

Solve each equation. Round your answers to the nearest ten-thousandth.

11) $\log_5 (p+7) = 4$

$5^4 = p+7$

$625 = p+7$

$-7 \quad -7$

$618 = p$

12) $\log_2 3x = 4$

$2^4 = 3x$

$16 = 3x$

$5.\overline{3} = x$

13) $\log_5 -4m = -1$

$5^{-1} = -4m$

$.2 = -4m$

$-.05 = m$

14) $\log_5 (k+6) = 4$

$5^4 = k+6$

$625 = k+6$

$619 = k$

15) $\log_{11} (-7k-10) = 3$

$11^3 = -7k-10$

$1331 = -7k-10$

$1341 = -7k$

$-191.57 = k$

16) $\log_2 (5v+4) = -1$

$2^{-1} = 5v+4$

$.5 = 5v+4$

$-3.5 = 5v$

$-.7 = v$

17) $\log_2 (4p+2) = 3$

$2^3 = 4p+2$

$8 = 4p+2$

$6 = 4p$

$1.5 = p$

18) $\log_8 (-n+6) = -2$

$8^{-2} = -n+6$

$.016 = -n+6$

$-5.984 = -n$

$5.984 = n$

19) $\log_6 (-2x-1) + 6 = 10$

$-6 \quad -6$

$\log_6 (-2x-1) = 4$

$6^4 = -2x-1$

$1296 = -2x-1$

$1297 = -2x$

$-648.5 = x$

20) $-10 + \log_3 (3x+3) = -9$

$+10 \quad +10$

$\log_3 (3x+3) = 1$

$3^1 = 3x+3$

$3 = 3x+3$

$0 = 3x$

$0 = x$

21) $-4 - 9\log_9 (6b-1) = -22$

$+4 \quad +4$

$\frac{-9\log_9 (6b-1)}{-9} = \frac{-18}{-9}$

$\log_9 (6b-1) = 2$

$9^2 = 6b-1$

$81 = 6b-1$

$82 = 6b$

$13.\overline{6} = b$

22) $-8\log_6 (5n-6) + 10 = 18$

$-10 \quad -10$

$\frac{-8\log_6 (5n-6)}{-8} = \frac{8}{-8}$

$\log_6 (5n-6) = -1$

$6^{-1} = 5n-6$

$.1\overline{6} = 5n-6$

$6.1\overline{6} = 5n$

$1.2\overline{3} = n$