NAME Key Date _____ Pd ___

6.3 Logarithmic Function DAY TWO CYU

☑ *Use when you get it right all by yourself*

S *Use when you did it all by yourself, but made a silly mistake*

H *Use when you could do it alone with a little help from teacher or peer*

G *Use when you completed the problem in a group*

X *Use when a question was attempted but wrong (get help)*

N *Use when a question was not even attempted*

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Converting between inverses	1 - 14		31
Evaluating logarithmic expression		15	
Solving logarithmic equations		16 - 30	31

FILL IN ALL BLANKS BELOW. If given exponential form, write in log form; if given log form, write in exponential form. **The first 3 are done for you as examples and reminders. ** I heart logs!!****

Exponential: $b^y = x$	**Logarithmic:** $\log_b x = y$
1. $6^2 = 36$	1. $\log_6 36 = 2$
2. $10^4 = 10{,}000$	2. $\log_{10} 10{,}000 = 4$
3. $2^{-3} = \frac{1}{8}$	3. $\log_2 \frac{1}{8} = -3$
4. $9 = 27^{\frac{2}{3}}$	4. $\log_{27} 9 = \frac{2}{3}$
5. $8 = 2^3$	5. $\log_2 8 = 3$
6. $.001 = 10^{-3}$	6. $\log 0.001 = 3$
7. $16^{\frac{1}{2}} = 4$	7. $\log_{16} 4 = \frac{1}{2}$
8. $81^{-\frac{1}{2}} = \frac{1}{9}$	8. $\log_{81} \frac{1}{9} = -\frac{1}{2}$
9. $3^2 = 9$	9. $\log_3 9 = 2$
10. $6^{-2} = \frac{1}{36}$	10. $\log_6 \frac{1}{36} = -2$
11. $1 = 5^0$	11. $\log_5 1 = 0$
12. $\frac{1}{125} = 5^{-3}$	12. $\log_5 \frac{1}{125} = -3$
13. $\frac{1}{2}^3 = \frac{1}{8}$	13. $\log_{\frac{1}{2}} \frac{1}{8} = 3$
14. $5^3 = 125$	14. $\log_5 125 = 3$

15. Evaluate.

a. $\log_5 25$ 2

b. $\log_3 \frac{1}{9}$ -2

c. $\log_{\frac{1}{2}} 16$ -4

d. $\log 1000$ 3

e. $\ln e$ 1

f. $\log 1$ 0

Solve for x.

16. $\log_3 x = -4$

$x = \frac{1}{81}$

17. $\log_{-4} x = \frac{1}{2}$

$x = \pm 2i$

18. $\log_5 x = -3$

$x = \frac{1}{125}$

19. $\log_{\frac{1}{3}} x = -2$

$x = 9$

20. $\log_2 (x^2 - 9) = 4$

$x = \pm 5$

21. $\log_3 \sqrt{x-2} = -1$

$x = \frac{10}{9}$

22. $\log_{64} \frac{1}{2} = x$

$x = \frac{1}{6}$

23. $\log_{\frac{1}{4}} 16 = x$

$x = -2$

24. $\log_{\sqrt{2}} x = -6$

$x = \frac{1}{8}$

25. $\log_x 81 = \frac{4}{3}$

$x = 27$

26. $\log_x \frac{1}{4} = -\frac{1}{2}$

$x = 16$

27. $\log_x 3 = 0$

$\emptyset$

28. $\log_x \frac{1}{16} = 2$

$x = \pm \frac{1}{4}$

29. $\log_x 32 = \frac{5}{2}$

$x = 4$

30. $\log_x 64 = -3$

$x = \frac{1}{4}$

31. Solve over the set of real numbers.

a) $27^{x+4} = \frac{1}{3}$

$x = -\frac{13}{3}$

b) $8^{\frac{1}{2}} = 4^{x^2 - x}$

$x = \frac{3}{2}, -\frac{1}{2}$

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.