

6.3 & 6.4 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 the inverses	1 - 6	19 - 24	25
Evaluating logarithms	8, 9, 12 - 15	7, 10	11
Simplifying logarithmic/exponential expression	16 - 18		
Finding the inverse function		19 - 24	25
Real-world application			25
Describing transformations with exponential & logarithms			26 - 27
Sketching exponential/logarithms			26 - 27
Writing rules from transformations		28 - 29	

Rewrite the equation in exponential form. "I heart logs"

1. $\log_9 1 = 0$ 2. $\log_6 216 = 3$ 3. $\log_2 \frac{1}{4} = -2$
 $9^0 = 1$ $6^3 = 216$ $2^{-2} = \frac{1}{4}$

Rewrite the equation in logarithmic form. "I heart logs"

4. $13^{-2} = \frac{1}{169}$ 5. $4^{3/2} = 8$ 6. $81^{1/2} = 9$
 $\log_{13} \frac{1}{169} = -2$ $\log_4 8 = \frac{3}{2}$ $\log_{81} 9 = \frac{1}{2}$

Evaluate the logarithm. "I heart logs" with a ?; no x =.

7. $\log_8 64$ 8. $\log_2 32$ 9. $\log_{10} 1$
 2 5 0

10. $\log_3 \frac{1}{81}$ 11. $\log_2 0.125$ 12. $\log_{10} 0.01$
 -4 -3 -2

Evaluate the logarithm using a calculator. Round your answer to three decimal places.

13. $\log\left(\frac{1}{5}\right)$ -0.699 14. $2 \ln(1.4)$ 0.673 15. $\ln(0.4) - 2$ -2.916

Simply the expression. Show all work for full credit. Remember square root and quadratics are inverses, so they cancel each other.

16. $e^{\ln 7x}$ 17. $10^{\log 18}$ 18. $\log(10^{3x})$
 7x 18 3x

Find the inverse of the function. Show all work for full credit. "I heart logs"

19. $y = 0.75^x$

$\log_{0.75} x = y^{-1}$

20. $y = \log_{3/4} x$

$y^{-1} = \left(\frac{3}{4}\right)^x$

21. $y = \log\left(\frac{x}{2}\right)$

$y^{-1} = 2(10^x)$

22. $y = \ln(x + 2)$

$y^{-1} = e^x - 2$

23. $y = e^{x-3}$

$y^{-1} = (\ln x) + 3$

24. $y = 6^x + 2$

$y^{-1} = \log_6(x - 2)$

25. The length ℓ (in inches) of an alligator and its weight w (in pounds) are related by the function $\ell = 27.1 \ln w - 32.8$.

a. Estimate the length (in inches) of an alligator that weighs 250 pounds. What is its length in feet?

$\approx 116.832 \text{ in} \approx 9.74 \text{ ft}$

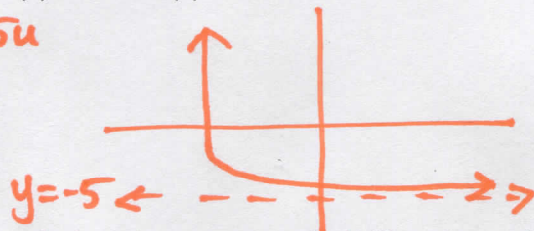
b. Find the inverse of the given function. Use the inverse function to find the weight of a 14-foot alligator. (Hint: Convert to inches first.)

$\approx 1652.426 \text{ lbs}$

Describe the transformation of f , the parent function, represented by g . Then sketch each function. Think about t -charts, PP's, and asymptotes.

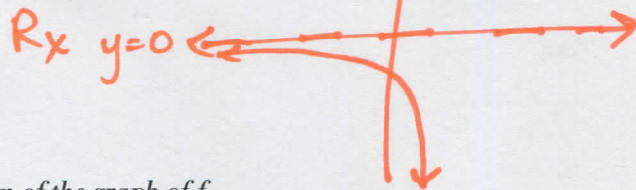
26. $f(x) = e^{-x}, g(x) = e^{-x} - 5$

$\downarrow 5u$



27. $f(x) = e^x, g(x) = -e^{x+2}$

$\leftarrow 2u$



Write a rule for g that represents the indicated transformation of the graph of f .

28. $f(x) = \left(\frac{2}{5}\right)^x$; reflection in the y -axis, followed by a horizontal compression by a factor of 2 and a translation 4 units down

$f(x) - 4$

$f(x) \rightarrow g(x)$

$g(x) = \left[-\frac{1}{2}\left(\frac{2}{5}\right)\right]^x - 4$ OR $\left(\frac{-2}{10}\right)^x - 4$ OR $\left(-\frac{1}{5}\right)^x - 4$

29. $f(x) = e^{-x}$; translation 2 units left and 3 units up, followed by a vertical stretch by a factor of 2

$2f(x+2) + 3$

$f(x) \rightarrow g(x)$

$g(x) = 2e^{-x+2} + 3$

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.

