Name: _____ Date:_____ Period: _____ **Corrective**

End-of-Unit 2B Corrective Assignment –Exponential and Logarithmic

Lessons 2.9 through 2.15

Reviews do NOT cover all material from the lessons but will hopefully remind you of key points. To be prepared, you must study all packets from Unit 2B.

1. The function f is given by $f(x) = 2 \cdot 4^{x-6} - 8$. Find $f^{-1}(x)$.

$x = 2 \cdot 4^{y-6} - 8$

$\frac{x+8}{2} = \frac{2 \cdot 4^{y-6}}{2}$

$\frac{x+8}{2} = 4^{y-6}$

$\log_4\left(\frac{x+8}{2}\right) = y-6$

$\log_4\left(\frac{x+8}{2}\right) + 6 = y$

2. What is the solution to the equation $5 \cdot log_2(x+4) - 8 = 12$.

$\frac{5}{5} \cdot \log_2(x+4) = \frac{20}{5}$

$\log_2(x+4) = 4$

$x+4 = 2^4$

$x+4 = 16$

$x = 12$

3. What are all of the solutions to the inequality: $\ln(3x-10) > \ln(5x-28)$

$3x-10 > 0$

$3x > 10$

$x > \frac{10}{3}$ (3.33)

$5x-28 > 0$

$5x > 28$

$x > \frac{28}{5}$ (5.6)

$(\frac{28}{5}, 9)$

$3x-10 > 5x-28$

$-10 > 2x-28$

$18 > 2x$

$9 > x$

$x < 9$

4. ***Calculator Active:*** Mr. Sullivan used collect Beanie Babies! This was a big way for him to invest money into something and hope the value would go up over time! Below he tracked the value of one of his Beanie Babies over the course of a few years.

Years Owned	2	3	5	7
Value of Beanie Baby ($)	22.12	32.56	45.85	54.60

a) What's a logarithmic regression equation that could model this situation?

$y = 4.11 + 25.94 \ln x$

b) How long did he own this Beanie Baby if its value is now $70?

$70 = 4.11 + 25.94 \ln x$

$65.89 = 25.94 \ln x$

$2.54 = \ln x$

$e^{2.54} = x$

$12.68 \text{yrs} = x$

5. Let *a, b,* and *c* be positive constants. What is an equivalent expression to $\log(3a^3b^7)$?

$\log 3 + \log a^3 + \log b^7$

$\log 3 + 3\log a + 7\log b$

6. The function *f* is given by $f(x) = log_2(x)$. The function *g* is given by $g(x) = log_2(64x)$. Rewrite the function using properties of logarithms and explain any transformations from *f(x)* to *g(x)*.

$f(x) = \log_2 64 + \log_2 x$

$f(x) = 6 + \log_2 x$

Translation up 6 units

7. Using the tables below, determine if the data given is exponential. Explain your answer.

a.

x	5	7	11	19
y	1	2	3	4

This is logarithmic because the x-values increase at an exponential rate, while the y-values increase at a constant rate.

b.

x	1	2	3	4
y	1	2	4	8

This is exponential because the x-values increase at a constant rate while the y-values increase at an exponential rate.

c.

x	2	3	4	5
Log y	3	7	11	15

This is exponential because the x-values and the LOG of the y-values increase at a constant rate. It's a semi-log data that would be linear.

8. The function *f* is given by $f(x) = -\log(x + 4) - 10$. Find the information below for *f*.

Asymptote: $x = -4$

Domain: $(-4, \infty)$

Range:

End Behavior: $x \to \infty, f(x) \to -\infty$

$x \to -4^+, f(x) \to \infty$

Sketch of *f*: