

**ALGEBRA 2** – Unit 8 / Day 10  
**HOMEWORK:** Team Challenge Review

Name \_\_\_\_\_

1. Use log properties rewrite as a single logarithm.  $\frac{2}{3}\ln x - \frac{3}{4}\ln(x-2) + 3\ln(2+x) - \frac{5}{6}\ln z$

2. Use log properties to **expand** the logarithm and **evaluate** where possible:  $\log_2\left(\frac{8\sqrt{x^3}y^7}{(w-1)^4\sqrt[5]{z^2}}\right)$

3. Use log properties to **evaluate** the following expressions.

<p>a. <math>\frac{1}{3}\log_4\left(\frac{1}{64}\right) - \frac{3}{5}\log_4 32 + 2\log_4 8</math></p>	<p>b. <math>\frac{1}{2}\log_3 4 + 2\log_3\left(\frac{1}{6}\right) - \log_3\left(\frac{1}{6}\right)</math></p>
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4. **NO CALCULATOR...** Use only your powers chart. Evaluate each logarithm.

a. $\log_7 128 = ?$	b. $\log_4 1 = ?$	c. $\log_2 ? = -4$	d. $\log_{625} 5 = ?$
e. $\log_3 ? = 5$	f. $\log_3 \frac{1}{729} = ?$	g. $5\ln e^2 = ?$	h. $\log_{16} \frac{1}{32}$
i. $\log_{216} ? = \frac{2}{3}$	j. $\log_{343} \frac{1}{2401} = ?$	k. $\log_{81} ? = \frac{3}{4}$	l. $\log_{128} \frac{1}{32} = ?$

5. Find the inverse for the following equations.

a.  $y = 16(x+1)^2 + 7$

b.  $y = \frac{4x + 1}{3x - 4}$

6. Solve the following for  $x$ . Get exact and approximate answers to the nearest thousandth.

a.  $5(2)^{3x-1} + 6 = 21$

b.  $\frac{1}{3}e^{5x} + 4 = 7$

c.  $-3\log_7(5x + 4) + 16 = 10$

d.  $\ln(3) + \ln(x + 5) - \ln 4 = \ln 6$

7. Suppose you invest \$12,000 into an account that earns interest compounded monthly. If you have \$16,000 after 15 years, find the interest rate for the account.
8. When cell phones were introduced in 1985, the small town of Centerville had 285 cell phone users. By 1990, the number of cell phone users had increased to 1,827.
- Write an exponential equation to model the situation.
  - Assuming the number of cell phone users grows exponentially; when will the number of users reach 10,000?

9. Suppose you invest \$6500 at an annual interest of 3.75% compounded continuously.
- How much will you have in the account after 12 years?
  - How much should you have invested initially in the same account if you wanted to have \$8600 after five years?
  - How long will it take for the account in part (a) to reach \$10,500?

10. Graph  $y = -3\log_2(x + 4) - 5$

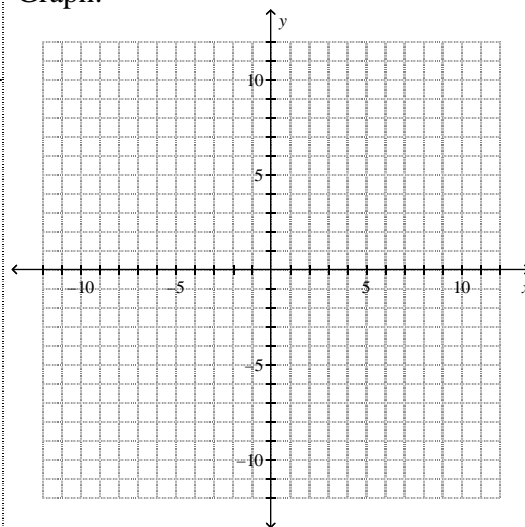
Describe Transformations in words:

Table:

	$x$	$y$	

Parent Equation in Exponential Form:

Graph:



Asymptote:

Domain:

Range: