Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples	
Logarithmic Equations **TYPE I: LOG = LOG**	① **CONDENSE** each logarithm.	
	② **Use the One-to-One Property:** If $\log_b m = \log_b n$, then	
	③ **SOLVE** and **CHECK FOR EXTRANEOUS SOLUTIONS**.	
	1. $\log_5(5x+9) = \log_5(6x)$	**2.** $\log_2(1-4n) = \log_2(2n+43)$
	3. $\log_9(6-3w) = \log_9(-2w)$	**4.** $\log(y+5) + \log 4 = \log 72$
	5. $3 \cdot \log_7 4 = \log_7(4a-8)$	**6.** $\log_4 68 - \log_4 4 = \log_4(3n+11)$
	7. $\frac{1}{2} \cdot \log_6 25 = \log_6(23-4w)$	**8.** $\log_3(2p-5) = 2 \cdot \log_3 6 - \log_3 4$

	9. $\log_4(m^2) = \log_4(18 - 7m)$	**10.** $\log 2 + \log(k^2) = \log(k^2 + 16)$

TYPE 2: LOG = NUMBER

①	**CONDENSE** and **ISOLATE** the logarithm.
②	Write the equation in **EXPONENTIAL FORM.**
③	**SOLVE** and **CHECK FOR EXTRANEOUS SOLUTIONS**.

11. $\log_2(x - 4) = 6$	**12.** $\log_3(4x + 8) - 7 = -3$
13. $\log(2x) + \log(x - 5) = 2$	**14.** $2 \cdot \log x - \log 4 = 2$
15. $\log_6(x + 9) + \log_6 x = 2$	**16.** $\log(x - 3) + \log x = 1$

Name: _____ **Unit 7:** Exponential & Logarithmic Functions

Date: _____ **Bell:** _____ **Homework 6:** Solving Logarithmic Equations

**** This is a 2-page document! ****

Directions: Solve each equation. Check for extraneous solutions.

1. $\log_3(3x-11) = \log_3(25-x)$

2. $\log_7(4n-7) = \log_7(-3n)$

3. $\log_2 75 = \log_2 3 + \log_2(2y-1)$

4. $2 \cdot \log m = \log 36$

5. $\log_4 108 - \log_4 9 = \log_4(7a-9)$

6. $\frac{1}{3} \cdot \log_5 64 = \log_5 8 + \log_5 p$

7. $\log(w^2+21) = \log(10w)$

8. $\log_2(2x) + \log_2(x-7) = \log_2(4x)$

9. $\log_4(2m^3 - 14m^2) - \log_4(2m) = \log_4 8$

10. $2 \cdot \log(x - 3) = \log 25$

11. $\log_3(2x - 7) = 4$

12. $\log_8(28k - 20) + 15 = 18$

13. $\log_9(15 - 4n) = \frac{1}{2}$

14. $\log_2 4 + \log_2(c - 9) = 5$

15. $2 \cdot \log_4 k = 4$

16. $\log_8(p^2 + 15) = 2$

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples	
WARM-UP Using a common base to solve an exponential equation.	**Directions:** Solve the equations below using a common base.	
	1. $5^{n+10} = 25$	**2.** $9^{a+2} = 27^{4a-2}$
What if a common base is NOT possible?	① **ISOLATE** the exponential expression.	
	② **TAKE THE LOG** of **both sides**.	
	③ You may need to **EXPAND** the log. (Use the Power Rule)	
	④ **SOLVE** and **CHECK FOR EXTRANEOUS SOLUTIONS**.	
	*Rounded answers may not produce the exact same answer, but will be very close.	
Examples	**3.** $2^x = 61$	**4.** $8^{m-7} = 92$
	5. $4 \cdot 7^n = 148$	**6.** $4^{3w} - 5 = 3$

	7. $7 - 4^{x+1} = 18$	**8.** $10 \cdot 5^{3k-3} = 40$
	9. $4 \cdot 3^{n} + 15 = 359$	**10.** $-2 \cdot 5^{p} + 7 = -63$
	11. $5 \cdot 9^{v-1} + 1 = 181$	**12.** $8 \cdot 11^{7k} - 3 = 213$
	13. $6 \cdot 16^{7y+2} - 2 = 82$	**14.** $3 \cdot 8^{3-7n} + 10 = 94$

7

Name: _____ **Unit 7:** Exponential & Logarithmic Functions

Date: _____ **Bell:** _____ **Homework 7:** Solving Exponential Equations (using logs)

**** This is a 2-page document! ****

Directions: Solve each exponential equation using logarithms.

1. $3^x = 18$	**2.** $7^y = 24$
3. $12^{n-3} = 60$	**4.** $2^{3a} = 142$
5. $15^{3v-5} = 87$	**6.** $4^{8n-2} = 84$
7. $4 \cdot 10^k = 60$	**8.** $16^n - 6 = 45$

9. $13^{c-8} - 9 = 17$

10. $2 \cdot 8^{5r} = 28$

11. $10^{2x-7} - 3 = 57$

12. $8^{6-4x} + 6 = 22$

13. $6 \cdot 4^{m} - 14 = 88$

14. $9 \cdot 12^{r+4} - 8 = 127$

15. $-5 \cdot 4^{6x} + 5 = -30$

16. $8 \cdot 11^{3p-9} + 10 = 194$

Name: _____ **Unit 7:** Exponential & Logarithmic Functions

Date: _____ **Bell:** _____ **Homework 8:** Logarithmic & Exponential Equations

**** This is a 2-page document! ****

Directions: Solve each equation. Check all answers for extraneous solutions.

1. $\log_4(25-2x)=\log_4(6x+1)$

2. $\log_9(8y-9)=\log_9 108-\log_9 4$

3. $6\cdot\log_2 2=\log_2 8+\log_2(a-2)$

4. $\log_6(5w+14)=2\cdot\log_6 w$

5. $\log_7(3x+5)=2$

6. $\log_{27}(11-2k)=\frac{1}{3}$

7. $\log(24x+64)=3$

8. $5=\log_3 8+\log_3(r+6)$

9. $5^{x-4} = 25^{x-6}$

10. $36^{5v+2} = \left(\frac{1}{6}\right)^{11-v}$

11. $5^{m} = 220$

12. $14^{p-8} = 62$

13. $3 \cdot 4^{n+2} = 78$

14. $5^{8-2y} - 10 = 45$

15. $2 \cdot 10^{6c} + 9 = 17$

16. $9 \cdot 14^{5a+9} + 8 = 107$