

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples			
What is "e"?	<ul style="list-style-type: none"> e is an _____ with an approximate value of _____. e often occurs as the base of exponential and logarithmic functions that describe real-world scenarios. 			
Base "e" Exponential Functions	<ul style="list-style-type: none"> Exponential functions with base e are called _____ exponential functions. Example: _____ 			
Base "e" Logarithmic Functions	<ul style="list-style-type: none"> Logarithmic functions with base e are called _____ Example: _____. This is often abbreviated as _____. 			
Converting Between Forms	Write each equation in logarithmic form.			
	<table border="1"> <tr> <td>1. $e^x = 24$</td> <td>2. $e^9 = x$</td> <td>3. $e^{x+5} = 72$</td> </tr> </table>	1. $e^x = 24$	2. $e^9 = x$	3. $e^{x+5} = 72$
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	Write each equation in exponential form.			
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Simplifying with Properties	Condense each expression into a single logarithm.			
	<table border="1"> <tr> <td>7. $\ln 3 + \ln 16$</td> <td>8. $\ln 63 - 2 \cdot \ln 3$</td> <td>9. $\frac{1}{3} \cdot \ln 64 + 2 \cdot \ln x$</td> </tr> </table>	7. $\ln 3 + \ln 16$	8. $\ln 63 - 2 \cdot \ln 3$	9. $\frac{1}{3} \cdot \ln 64 + 2 \cdot \ln x$
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	Expand each logarithm.			
<table border="1"> <tr> <td>10. $\ln 5x$</td> <td>11. $\ln \left(\frac{a^3}{b} \right)^2$</td> <td>12. $\ln \sqrt[3]{m^2 n}$</td> </tr> </table>	10. $\ln 5x$	11. $\ln \left(\frac{a^3}{b} \right)^2$	12. $\ln \sqrt[3]{m^2 n}$	
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Solving
Equations

Solve each equation below. Check for extraneous solutions.

13. $\ln(4x - 27) = \ln(15 - 2x)$

14. $2 \cdot \ln k = \ln(2k + 15)$

15. $\ln 72 - \ln 4 = \ln 6 + \ln(a - 2)$

16. $2 \cdot \ln(m + 4) = \ln 4$

17. $\ln 8x = 2$

18. $\ln x - \ln 9 = 7$

19. $e^x = 57$

20. $e^{y+3} - 6 = 24$

21. $5e^{4n} = 95$

22. $2e^{c-9} + 3 = 87$

Name: _____ Unit 7: Exponential & Logarithmic Functions

Date: _____ Bell: _____ Homework 9: Base e and Natural Logarithms**** This is a 2-page document! ******Directions:** Write each equation in logarithmic form.

1. $e^3 = x$

2. $e^x = 36$

3. $e^{x-9} = 74$

Directions: Write each equation in exponential form.

4. $\ln 53 = x$

5. $\ln x = 18$

6. $\ln 87 = x + 4$

Directions: Condense each expression as a single logarithm.

7. $\ln 4 + \ln 3x$

8. $\frac{1}{2} \cdot \ln 256 - 3 \cdot \ln 2$

9. $7 \cdot \ln a - 4 \cdot \ln b$

Directions: Expand each logarithmic expression.

10. $\ln(2m^8)$

11. $\ln\left(\frac{m^5}{n^2}\right)^3$

12. $\ln\sqrt{r^8s^5}$

Directions: Solve each equation. Be sure to check for extraneous solutions.

13. $\ln(9x - 7) = \ln(5x + 33)$

14. $\ln(2x^2 - 15) = \ln(x^2 + 34)$

15. $\ln 60 - \ln 4 = \ln(x^2 + 2x)$

16. $\ln 8 + \ln(n - 9) = 5 \cdot \ln 2$

17. $\ln(4w + 9) = 5$

18. $\ln k - \ln 14 = 2$

19. $e^x = 21$

20. $-2e^c + 14 = -6$

21. $e^{y-1} - 27 = 54$

22. $4e^{3k} + 1 = 85$

23. $e^{5-2p} + 2 = 4$

24. $3e^{4m-7} - 8 = 106$