Algebra 2H **HW #_____** **Name_____**

Worksheet 8.6H

Logarithmic Equations and Review **Per._____Col._____ Date_____**

Solve for *x*.		
1. $\log_a x = \frac{3}{2}\log_a 9 + \log_a 2$	2. $\ln\left(4x^2\right) = \ln\left(11x-6\right)$	3. $\ln\left(3x+5\right) - \ln\left(x-5\right) = \ln 8$
4. $\log_a x + \log_a (x+2) = \log_a 8$	5. $2\log_2 x = 6$	6. $\log_4\left(x^2-17\right) = 3$
Solve for *x*. Give answers in terms of *e*.		
7. $\ln 4x = 14$	8. $3\ln x - 5 = 16$	9. $\frac{1}{2}\ln\left(x-3\right) = 4$

Answers: 1. 54 2. $\frac{3}{4}$, 2 3. 9 4. 2 5. 8 6. ± 9 7. $\frac{e^{14}}{4}$ 8. e^7

9. $e^8 + 3$

Review ☺

10. Expand and simplify: $\log_2\left(\dfrac{8\sqrt[3]{M}}{N^5}\right)$

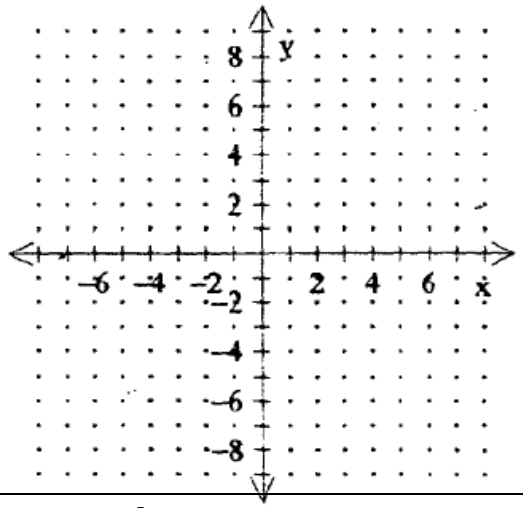
11. Condense to a single logarithm:
$2\left(\ln 15 - \ln 5\right) + \dfrac{1}{2}\ln\left(\dfrac{1}{25}\right)$

12. If $\log_2 5 \approx 2.321$ and $\log_2 3 \approx 1.585$, find the approximate value of $\log_2 \sqrt[3]{45}$.

13. Condense to a single logarithm and evaluate:
$\log_4 128 - 1$

14. Solve for x: $\log_x \sqrt[5]{9} = \dfrac{2}{5}$

15. Graph $y = \ln\left(x-2\right)$. Show asymptote and 3 points, including x-intercept. State domain and range.



Answers: 10. $3+\dfrac{1}{3}\log_2 M - 5\log_2 N$ 11. $\ln\left(\dfrac{9}{5}\right)$ 12. 1.830 13. $\dfrac{5}{2}$ 14. 3

15. D: $x > 2$, R: all real numbers