Algebra 2H **HW #_____** **Name_____**
Worksheet 8.6XH
Exponential Equations and Review **Per._____Col._____ Date_____**

Solve for *x*. For #1-3 and #8-9, give exact answers as reduced fractions. For #4-7, round answers to the nearest thousandth.

1. $4^{1-x} = \frac{1}{8}$	2. $27^{2x-1} = 9^{x+2}$	3. $49^{x-2} = 7\sqrt{7}$
4. $30^{-x} = 5$	5. $3^{2x-5} + 1 = 8$	6. $e^{-2x} = 3$
7. $3e^{2x+1} = 18$	8. $\ln(4x+1) - \ln 6x = \ln(5x+2) - \ln 8x$	9. $\frac{1}{2}(\log_3(x+2) + \log_3(x-2)) = 2$

Answers: 1. $\frac{5}{2}$ 2. $\frac{7}{4}$ 3. $\frac{11}{4}$ 4. -.473 5. 3.386 6. -.549 7. .396 8. 2 9. $\sqrt{85}$

10. Use logs to evaluate $\log_5 9$. Round answer to the nearest thousandth.

11. Solve for x. Leave answers in terms of e.

$|\ln x| = 1$

12. A new car costs $24,000 and decreases in value by 10% each year.

a) Using the exponential decay model $V = a(1-r)^t$, write an equation for the car's yearly value.

b) To the nearest tenth of a year, in how many years will the car's value be only half of its original value?

13. Suppose that $40,000 is invested at an annual rate of 3.5% with interest compounded continuously. Using the formula $A = Pe^{rt}$, how long will it take until the original investment is worth $48,000? Round the answer to the nearest tenth of a year.

Answers: 10. 1.365 11. e, $\frac{1}{e}$ 12. a) $V = 16000(.9)^t$ b) 6.6 yrs 13. 5.2 years