Name_____
Date_____

Advanced Algebra
Unit 3: Exponential, Log and Power Functions
Assignment #2 **www.washburngulliford.weebly.com**
(Most of these questions are like Friday's homework. You should be able to ISOLATE the base with your algebra steps that you already know. You then can put the base into your y= in your calculator and search your table for the answer. Remember fir example in 3^x, the 3 is the base and the x is the exponent. You are trying to isolate the base with the exponent)

Example:
18*3ˣ= 528
3^x=29.33 I divided both sides by 18 so I could ISOLATE the base
x=3.1 I entered 3x into my calculator and searched the table at least to the tenth position to find out where 3^x = 29.33. The answer x=3.1 is slightly more than the desired 29.33 but we will use that as our approximation since I am just having you go to the tenth.
Solve the following exponential equations.

1) $2^x = 8$

2. $3 \times 2^x = 48$

3. $3^x = \dfrac{1}{9}$

4. $4^x + 7 = 71$

5. $2^x \times 2^{x-2} = \sqrt{2}$

6. $2^x = \dfrac{1}{32}$

7. $2^{x+2} = 8$

8. $\sqrt[4]{3} = 9^x$

9. $2^x = \dfrac{4}{\sqrt{2}}$

10. $3 \times 2^x = 24$

11. $2 \times 3^{x+3} + 1 = 19$

12. $2^x = \dfrac{1}{\sqrt{8}}$

13. $2 \times 3^{2x-1} + 7 = 61$

14. $3^x = 9^7$

15. $2^x = 2\sqrt{2}$

16. $5^x = \dfrac{1}{\sqrt[3]{5}}$

17. $2 \times 2^x = 8$

18. $\left(\dfrac{1}{5}\right)^x = 25$

19. $2^{2x+1} \times 2^x = 16$

20. $6^{-x} = \dfrac{6}{\sqrt[5]{6}}$

21. $\left(\sqrt{2}\right)^x = 8$

22. $3^x = \left(\dfrac{1}{9}\right)^{4-x}$

23. $\left(2^{x+1}\right)^2 = \dfrac{1}{4}$

24. $4^{2x} = 8^{x-3}$

I can model real life scenarios with and solve exponential equations
You should be able to write all these equations as they are a reoccurrence of a major learning target in Unit 1. Y=U₀*rˣ where U₀ is the initial amount and r is the given rate.

I can model real life scenarios with and solve exponential equations
You should be able to write all these equations as they are a reoccurrence of a major learning target in Unit 1. Y=U_0*r^x where U_0 is the initial amount and r is the given rate.

25) A boat is purchased for $30,000. The boat depreciates 8% every year. Around how many years (answer needs to be to the tenth place) will it take for the boat to be worth $22,500?

26) A car is purchased for $19,500. The car depreciates by 11% every year. Around how many years (answer needs to be to the tenth place) will it take for the car to be worth around $13,200?

27) An investment is made in an account that earns interest. The initial amount of the investment was $12,000. The APR on this account is 8%. Around how many years will it take for this investment to grow to $18,000

28) You deposit $500 into an account that earns 4% APR compounded quarterly. After how many years will it take for the account to be worth $1,300?

29) You deposit $12,000 into an account that earns 7% APR compounded monthly. After how many years will it take for the account to be worth $22,000?

30) A bacteria doubles every single hour in the lab. The initial amount of bacteria was 300g. After how many hours will it take for the bacteria to be over 12,000g?