Name_____

Date_____

Advanced Algebra

Unit 3: Exponential, Log and Power Functions

Assignment #10 Solving Exponential Equations

We have been working on solving different types of functions in this unit. We have techniques for exponential functions and power functions. Solve the following equations using those techniques that we have been working on. Make sure your final answer is rounded to at least the tenths place.

1) $5^{2x} = 25^{\frac{1}{3}}$

2) $7^{5x} = 343$

3) $36^{2x} = 6^3$

4) $81 = 9^{3x}$

5) $121 = 11^{4x}$

6) $2^{6x} = 128$

7) $8^{2x} = 105^{\frac{1}{3}}$

8) $7^{5x} = 1600$

9) $45^{2x} = 6^3$

10) $135 = 9^{3x}$

11) $1600 = 11^{4x}$

12) $2^{6x} = 1025$

Learning Target: I can recognize where the horizontal asymptote is located on an exponential function.

Remember $y=k+U_0*r^x$

If there is a k value your asymptote is located at the line y=k
U_0 is your starting value
r is the rate

Find the horizontal asymptote for the following exponential equations.

1) $y= 2^x + 1$ 2) $y= -3+2^x$

3) $y= -5+3(2)^x$ 4) $y= 18*(6)^x$

Find the x intercept of the following exponential equations (if it has any). Remember to find an x intercept you substitute 0 in for y and you solve the equation. You should recognize by knowing the parent function and your shifts if it has an x intercept or not. You are applying your exponential Solving skills here.

1) $y= 14*2^x$ 2) $y= -2+3^x$

3) $y= 12+(.25)^x$ 4) $y= -18+2(.92)^x$

I can apply exponential equations. Write your equation in the form $y= U_0*r^x$ and use logs to solve.

1) You deposit $2,000 into an account that earns 8.25% APR compounded monthly. After how long will the account be worth $4,000?

2) You buy a boat for $32,000. The boat depreciates by 6% every year. Approximately, how long will it take for the boat to have a new value of $18,900.