Name_____

Date_____

Advanced Algebra

Unit 3: Exponential, Power and Log Functions- **Assignment #9**

Learning target: I can write the equation of a curve in the form $y = U_0 * r^x$ given 2 points on the curve.

Find the equation that contains the following points if the given point are on the curve $y = a*b^x$

You can make a table to help you or you can set up $y_2 = y_1 * r^{x_2 - x_1}$

Once you find r, you need to go backwards to get to U_0. Your final equation should be in the form $y = U_0 * r^x$

1) (-4,324) and (3, .14815)

r= $\left(\frac{1}{3}\right)$

$324r^7 = .14815$

$\left(\frac{.14815}{324}\right)^{\frac{1}{7}}$

final equation for #1

$y = 4\left(\frac{1}{3}\right)^x$

$324 = U_0\left(\frac{1}{3}\right)^{-4}$

$U_0 = 4$

2) (-2, .125) and (3,128)

r= 4

final equation for #2

$y = 2 \cdot 4^x$

$.125r^5 = 128$

$r = \left(\frac{128}{.125}\right)^{\frac{1}{5}}$ $r = 4$

$128 = U_0 4^3$

$U_0 = 2$

3) (-1, .06667) and (4,208.33)

$.06667r^5 = 208.33$

$r = \left(\frac{208.33}{.06667}\right)^{\frac{1}{5}}$

$r = 5$

r= 5

final equation for #3

$y = \frac{1}{3}(5)^x$

$2083 = U_0 5^4$

$U_0 = \frac{1}{3}$

4) (-2, .75) and (3, 24

r= 2

final equation for #4

$y = 3 \cdot 2^x$

$.75r^5 = 24$

$\left(\frac{24}{.75}\right)^{\frac{1}{5}}$ $r = 2$

$Y = U_0 \cdot r^x$

Assignment #9

5) (-4,0.03086) and (3, 67.5)

$67.5 = U_0 \cdot 3^3$

$U_0 = 2.5$

r= 3

final equation for #5

$y = 2.5(3)^x$

$.03086r^7 = 67.5$

$r = 3$

6) (-2, 0.075) and (3,76.8)

r= 4

final equation for #6

$y = 1.2(4)^x$

$76.8 = U_0 4^3$

$U_0 = 1.2$

$Y_1 \cdot r^{x_2 - x_1} = Y_2$

$.075r^5 = 76.8$

$r = 4$

7) (-1, 0.83333) and (4,6480)

r= 6

final equation for #7

$y = 5 \cdot 6^x$

$6480 = U_0 \cdot 6^4$

$U_0 = 5$

$.83333r^5 = 6480$

$r = 6$

8) (-2, .75) and (3, 24)

r= 2

final equation for #8

$y = 3(2)^x$

$24 = U_0 \cdot 2^3$

$U_0 = 3$

$.75r^5 = 24$

$r = 2$