Algebra 2 Worksheet Name: _____
Combo Day! Sections 7.1-7.3 Period: ___ #19

I. Tell whether the function shows growth or decay. Then find the percent of increase or decrease. Find some points, and then graph. Finally, give the domain and range.

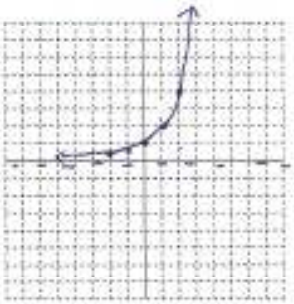
a. $y = 2^x$

Growth or Decay? Growth

Percent Increase/Decrease? 100%

Domain: $\mathbb{R}$eals Range: $y > 0$

x	y
-2	$\frac{1}{4}$
-1	1/2
0	1
1	2
2	4



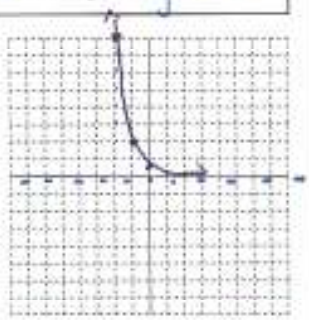
b. $y = \frac{1}{2}\left(\frac{1}{4}\right)^x$

Growth or Decay? Decay

Percent Increase/Decrease? 75%

Domain: $\mathbb{R}$eals Range: $y > 0$

x	y
-2	8
-1	2
0	$\frac{1}{2}$
1	1/8
2	1/32



II. Write an exponential function $y = ab^x$ to model the information. Then use your model to make the requested prediction or estimate the time.

3. Suppose you buy a computer that costs $1150 and expect for its value to depreciate by 42% each year. What will be the computer's resale value in 3 years?

$y = 1150(1 - .42)^3$

\$224.38

4. If a stock priced at $27 increases at a rate of 6.04% each year, when will it be worth approximately $100? Round to the nearest tenth of a year.

$y_1 = 27(1 + .0604)^x$

$y_2 = 100$ Intersect Key

Adjust window so y-max is greater than 100 and x-max is greater than 25. $\approx$ 22.3 years

III. Given $f(x)$, find the equation of its inverse, $f^{-1}(x)$.

5. $f(x)=\frac{x}{7}+5$ Switch x and y $x=\frac{y}{7}+5$ Solve for y $7(x-5)=\left(\frac{y}{\cancel{7}}\right)\frac{\cancel{7}}{1}$ $7x-35=y$ $\boxed{f^{-1}(x)=7x-35}$	6. $f(x)=-2x-7$ $x=-2y-7$ $\frac{x+7}{-2}=\frac{-\cancel{2}y}{\cancel{-2}}$ $\boxed{f^{-1}(x)=\frac{x+7}{-2}}$

V. Rewrite each equation in logarithmic form. $\log_{\text{Base}}$ Answer = Exponent

7. $\left(\frac{1}{2}\right)^{-4}=16$ $\log_{\frac{1}{2}}16=-4$	8. $10^{-4}=0.0001$ $\log .0001=-4$ 10 is understood to be the base

VI. Rewrite each equation in exponential form.

9. $\log_2 32=5$ $2^5=32$	10. $\log 1000=3$ $10^3=1000$

VII. Evaluate each logarithm WITHOUT the calculator.

11. $\log_4 16$ $4^?=16$ $\boxed{?=2}$	12. $\log 1$ $10^?=1$ $\boxed{?=0}$	13. $\log_{\frac{1}{3}} 27$ $\frac{1}{3}^{?}=27$ $\boxed{?=-3}$

Exponent is Negative Because you went from a fraction to a whole Number.