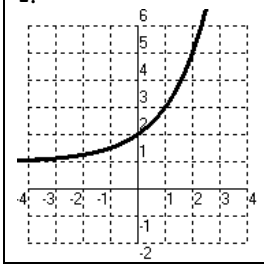
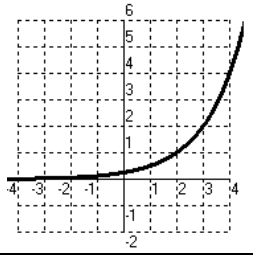
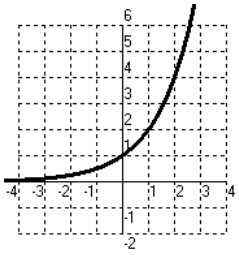
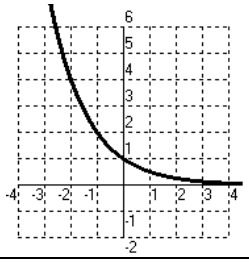
Pre-Calculus Worksheet

Name: _____

Section 3.1

Period: _____

I. Match the exponential function with its graph.

1.	2.	3.	4.	Choices:
				a. $y = 2^x$ b. $y = 2^x + 1$ c. $y = 2^{-x}$ d. $y = 2^{x-2}$

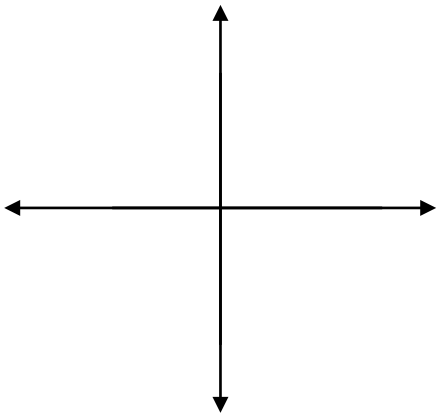
II. Sketch the graph of the function WITHOUT the graphing calculator. Then give the domain and range in interval notations for each graph. Also give the intercept(s).

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

Domain:

Range:

Intercept(s):

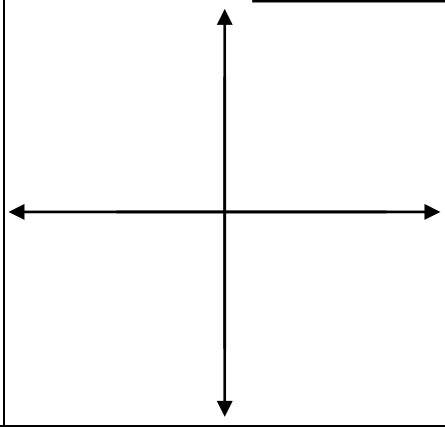


6. $f(x) = 2^{x-1}$

Domain:

Range:

Intercept(s):

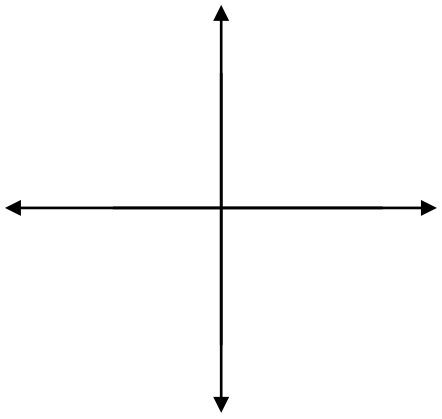


7. $g(x) = 4^{x-3} + 3$

Domain:

Range:

Intercept(s):

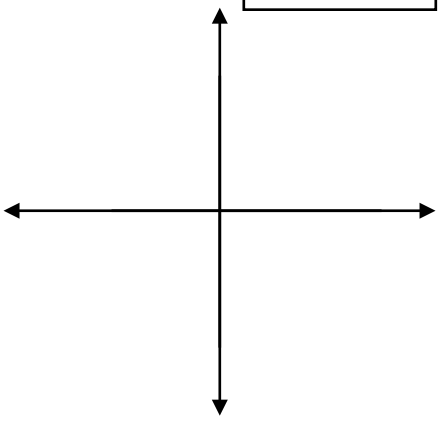


8. $y = 6^{-x}$

Domain:

Range:

Intercept(s):

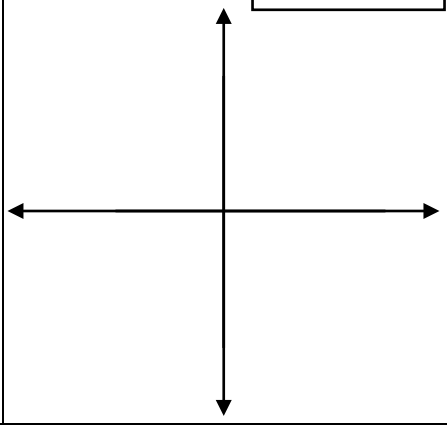


9. $h(x) = -5^{-x} + 4$

Domain:

Range:

Intercept(s):

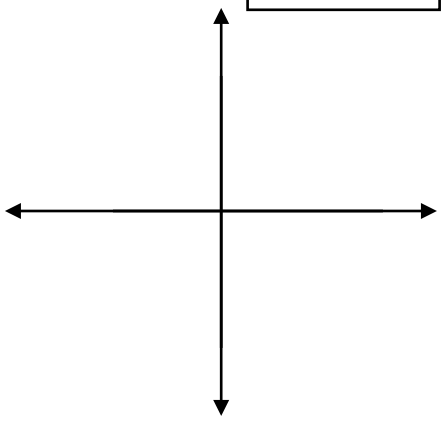


10. $y = -4^{x+2} + 1$

Domain:

Range:

Intercept(s):



III. Use the graph of f to describe the transformation that yields the graph of g.

11. $f(x)=3^x$ and $g(x)=3^{x-4}$	12. $f(x)=4^x$ and $g(x)=4^x+1$
13. $f(x)=-2^x$ and $g(x)=5-2^x$	14. $f(x)=10^x$ and $g(x)=10^{-x+3}$ BE CAREFUL!
15. $f(x)=\left(\frac{7}{2}\right)^x$ and $g(x)=-\left(\frac{7}{2}\right)^{-x+6}$ CAREFUL!	16. $f(x)=0.3^x$ and $g(x)=-0.3^x+5$

IV. Use the One-to-One Property to solve the equation for x.

17. $3^{x+1}=27$	18. $\left(\frac{1}{5}\right)^{x+1}=125$	19. $e^{x^2+6}=e^{5x}$
20. $7^x=\sqrt{343}$	21. $\left(\frac{1}{64}\right)^x=2^{3x+5}$	22. $4^{x-2}=\frac{1}{32}$

V. Applications. **SHOW ON A SEPARATE SHEET AND ATTACH TO THIS WORKSHEET.**

23. A deposit of $5000 is made in a trust fund that pays 7.5% interest, compounded continuously. It is specified that the balance will be given to the college from which the donor graduated after the money has earned interest for 50 years. How much will the college receive?

24. The number V of computers infected by a computer virus increases according to the model $V(t)=100e^{4.6052t}$, where t is the time in hours. Find (a) $V(1)$, (b) $V(1.5)$, and (c) $V(2)$.

25. Let Q represent a mass of carbon 14 (^{14}C) (in grams), whose half-life is 5715 years. The quantity of carbon 14 present after t years is $Q=10\left(\frac{1}{2}\right)^{\frac{t}{5715}}$. (a) Determine the initial quantity (when $t=0$).

(b) Determine the quantity present after 2000 years. (c) Sketch the graph on your calculator over the interval $t=0$ to $t=10{,}000$.