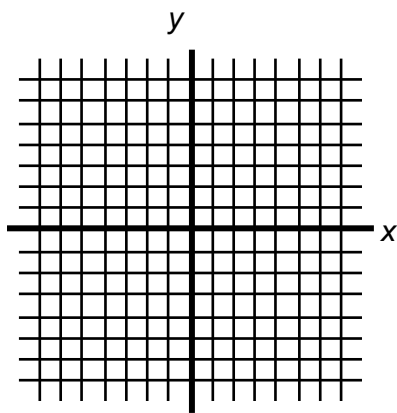NAME_____DATE_____PER_____

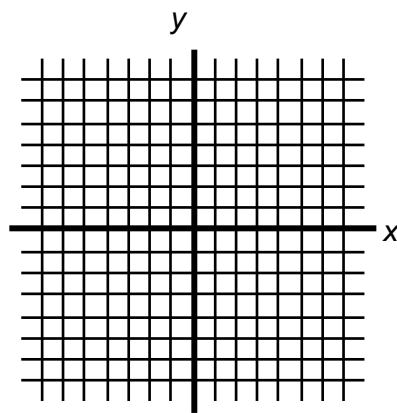**List the *five properties* of the exponential function f(x) = b^x**
1)_Domain: _____Range: _____
2)_X-Int. _____Y-Int._____
3)_VA: _____HA: _____
4)_Increasing: _____
5)_Decreasing: _____

Graph **the following exponential functions:**

6) $f(x) = 3^x$

7) $g(x) = \left(\dfrac{1}{3}\right)^x$

8) As the value of x increases, what happens to the values of $f(\mathbf{x})$? _____

_____

9) As the value of x increases, what happens to the values of $g(\mathbf{x})$? _____

_____

How can you *transform* the graph of f(x) = 5^x to obtain the graph of:

10) $g(x) = 5^{x+3}$ _____

11) $h(x) = 5^x - 4$ _____

Find a) the *horizontal asymptote* and b) the *y-intercept* of the following functions:
12) $g(x) = 4^x + 2$ a) _____   b) _____

13) h(x) = 5^{-x} – 3   a) _____   b) _____

14) Evaluate and round to four decimal places: log$_6$35   **14)** _____
[hint: use change of base formula]

15) Find the accumulated value of an investment of $15,000 for 8 years at an interest rate of 6.5% if the money is compounded as follows: [hint: write each formula then substitute]
   a) **Quarterly**   b) **Continuously**   **15) a)** _____

                                                                                b) _____

Solve Using "exponents".

16) $3^{8x+2} = 9^{2x-3}$

17) $\left(\dfrac{1}{5}\right)^{6} = \left(\dfrac{1}{25}\right)^{x}$

18) $4^{x} = \dfrac{1}{64}$

19) $32 = 4^{x}$

20) $2^{-2x} = 256$

16)	
17)	
18)	
19)	
20)	

Expand the following log expressions using the properties of logs:

21) $\log_6 \dfrac{\sqrt{x}}{36}$

22) $\ln(e^5 x^3)$

Condense (Write as a single log) the following log expressions using the properties of logs:

23) $4\ln x + 7\ln y - 3\ln z$

24) $6\log x - 2\log y - \log z$

25) a) Change to **_exponential_** form: $\dfrac{1}{2} = \log_{49} 7$

 b) Change to **_log_** form: $2^{-2} = \dfrac{1}{4}$

21)
22)
23)
24)
25) a)
b)
EXTRA CREDIT:

Extra Credit:
Write as a _single log_ ➔ $\log x + \log(x^2 - 1) - \log 7 - \log(x+1)$ [Show work]