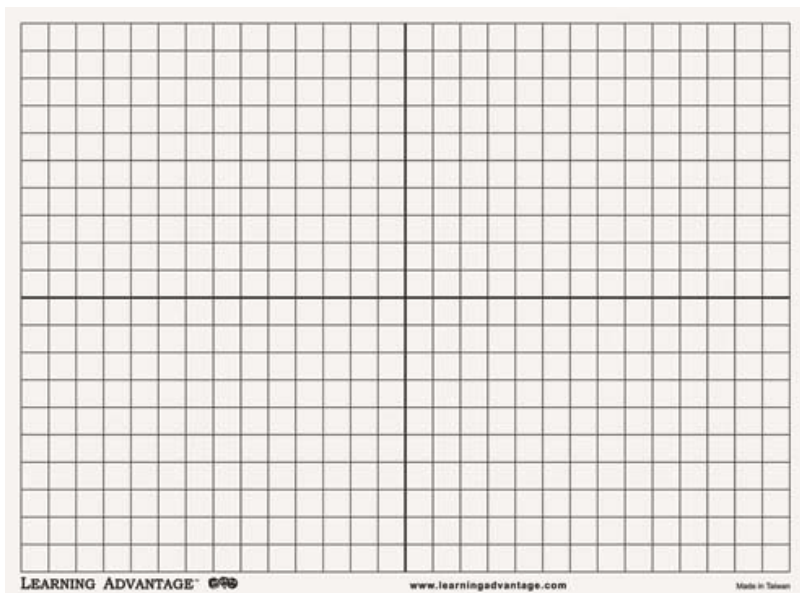Name_____ Mod_____

No calculator for this first page.

1. Graph $f(x) = 2^{x+3} - 1$. Also, find the inverse of $f(x)$ and graph it on the same graph below. State the domain of $f(x)$.

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2. What kind of asymptote does an exponential function have? What kind does a logarithmic have?

Name_____ Mod_____

Write each in logarithmic form. Do not solve.

1. $2^5 = 32$

2. $7^{-2} = \frac{1}{49}$

Write each in exponential form. Do not solve.

3. $\log_4 x = -5$

4. $\log 170 = x$

Expand. Use all the properties that apply.

5. $\log_4 \frac{a^2}{b^5}$

Use the properties to condense to one term.

6. $\log_6 x + 7\log_6 y - 3\log_6 z$

Solve each for x. Round to 3 decimals where necessary.

7. $\log_5 x = 2$

8. $e^{7x} = e^{x^2+6}$

9. $\log_2 16 = x$

10. $\log_{52} x = \frac{3}{4}$

11. $e^x = 20$

12. $\log_7(x +\text{-}2) = \log_7(3x + 10)$

13. $\ln 2x = 7.3$

14. $5\log_3(x + 5) = 40$

15. $4^x = 19$

16. $\ln\sqrt{x-1} = 4$

17. $4e^{2x} = 48$

18. 20. $\ln x = -2$

19. $\log_5 7 + \log_5(x - 2) = \log_5 3$

Compound interest:

$$A = P(1+\frac{r}{n})^{nt}$$

where A is the final amount, P is the initial investment, r is the interest rate, t is time, n compounding's per year

Continuous compounding:

$$A = Pe^{rt}$$

Where A is the final amount, P is the initial investment, r is the interest rate, and t is time

25. A total of $12,000 is invested at an annual interest rate of 9%. Find the balance after 5 years if it is compounded monthly.

26. A total of $1000 is invested at an annual interest rate of 6.5%. How many years will it take for your money to double if it is compounded continuously?