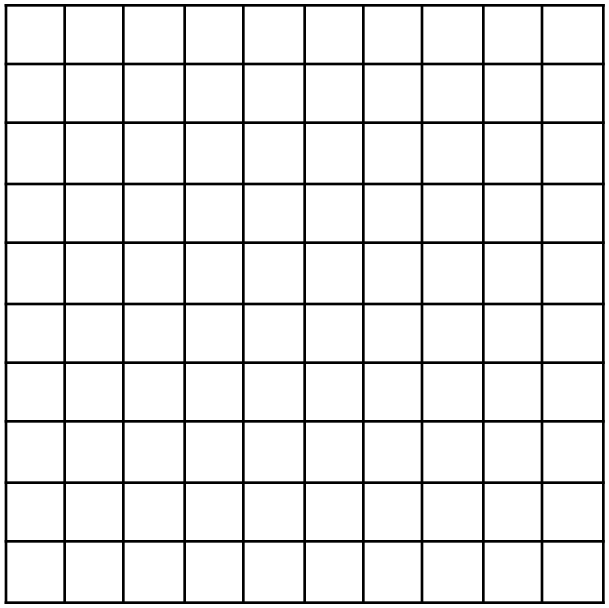
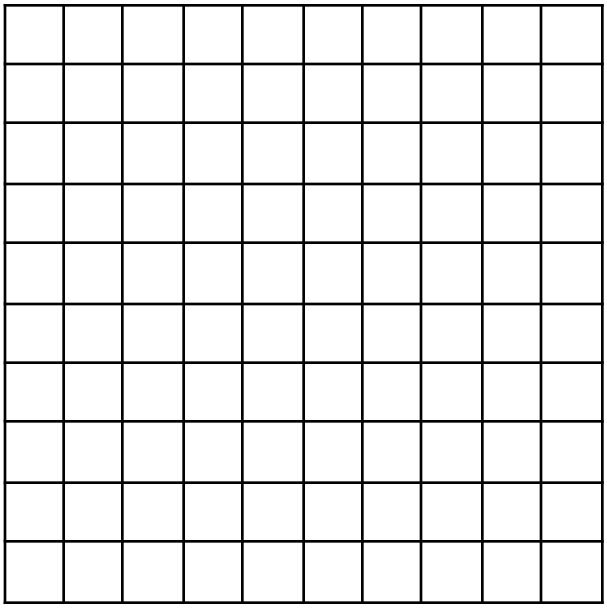
Honors Pre-Calculus Worksheet Chap 3 Name_____

1. Graph the following. Put in you own axis where appropriate. Label (plot) at least 3 points and show the asymptote.

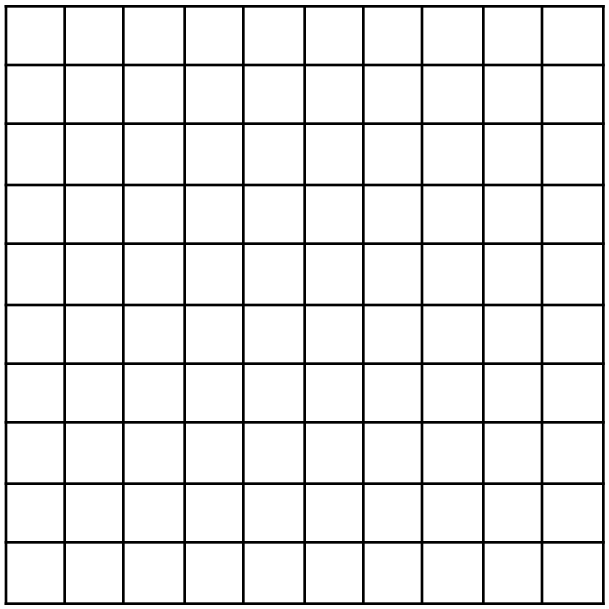
a) $y = \left(\frac{1}{3}\right)^{x-2} + 1$



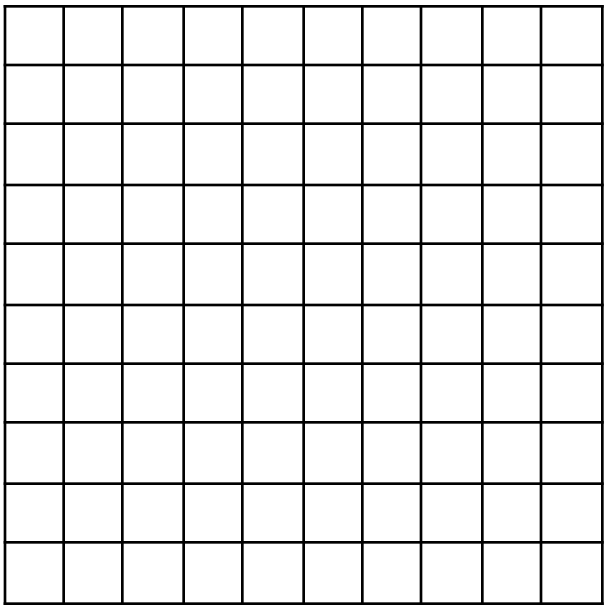
b) $f(x) = \frac{1}{2}(2)^x + 2$



c) $y = \log_3(x-1)$



d) $y = 2\log_2(x+2) + 2$



2. Find the domain, range, x intercept (if it exists), y intercept and asymptote.

3. Condense or expand.

a) $2\log_3 x - 3\log_3 y + \frac{2}{3}\log_3 z$ b) $\ln \frac{\sqrt[3]{x^4 b}}{d^2}$ c) $2.5\log_b x - 2\left(\log_b y + 3\log_b z\right) + \log_b \sqrt{x}$

4. Solve the following.

a) $9^{3x} = 3^{4x-1}$ b) $\log_5(3x+1) = 2$ c) $\log_6(x-5) + \log_6(x) = 2$ d) $e^{2x} + e^x = 42$

5. Suzy's uncle put $1,000 in the bank for her when she was born. How much will be in the account on her 16th birthday, if the bank pays 8% compounded quarterly?

6. The population of Suzyville has been growing at an annual rate of 12.5% since Suzy became mayor in 2003. If the population was 1802 in 2008, what was the population in 2003?

7. The half life of an element is 347 days. If Suzy started out with 1200 grams of the element, how long will it be before only 238 grams remain?

8. Suzy took some ibuprofen. The amount of ibuprofen in a person's bloodstream decreases by 29% each hour. If she took 300 mg when she got up at 7:00 am, how much is still in her bloodstream when she goes to bed at 10:00 pm?

9. Suzy was doing an experiment with bacteria. She has a petri dish with 2,300 bacteria in it. At what rate are they growing per hour, if after 9 hours there are 53,991?

10. Suzy was another experiment on fruit fly reproduction. After 3 days, she had 250 flies. After 7 days, she had 900 flies. Write an exponential model in the form $y = ae^{bx}$.