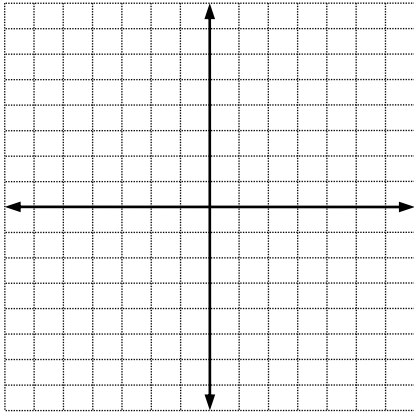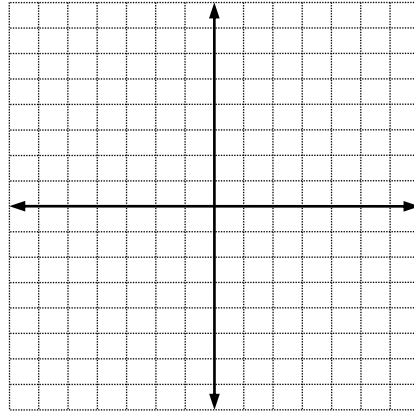Name _____

Graph the following and find the inverse. Make sure to include the table, description, domain, range, asymptote, y-intercept, x-intercept (if needed), growth and/or decay.
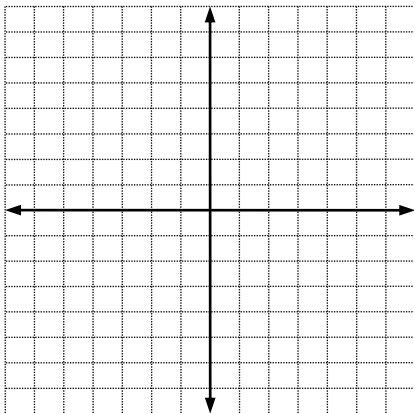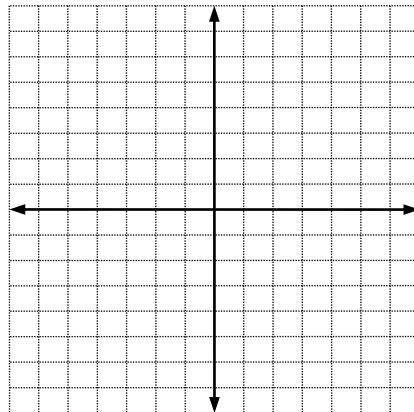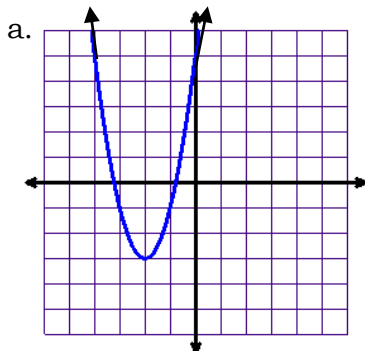
1. $f(x) = -2^{(x-2)} + 4$

Graph the inverse of #1
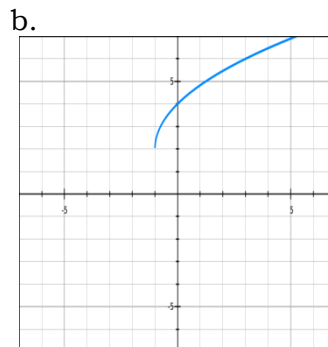
2. $f(x) = \dfrac{1}{3}^{x+3} - 3$

Graph the inverse of #2

3. Sketch the inverse. Find the domain and range of the given function and the inverse.

a.

Function
D:_____

R:_____

Inverse
D:_____

R:_____

b.

Function
D:_____

R:_____

Inverse
D:_____

R:_____

4. Solve each equation: a. $3^{2x+1} = 9^{2x-3}$ b. $\dfrac{1}{4}^{-x-4} = 64^{x+1}$

5. Find the inverse of each function, showing algebraic steps

     a. $y = \sqrt[3]{x-2} + 5$ b. $y = (3x-2)^3 - 9$ c. $y = \dfrac{3}{x-1}$

6. Verify that the following functions are (or are not) inverses using composition of functions.

$$f(x) = x^2 + 2, \ x \geq 0$$
$$g(x) = \sqrt{x-2}$$

7. Find the following function compositions using the given functions:

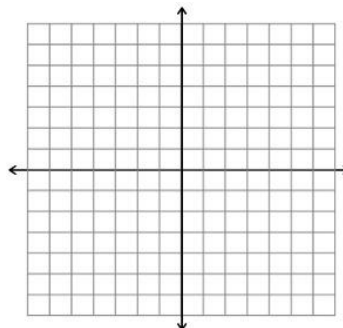| $f(x) = 4x - 3$	$g(x) = x^2 + 7$	$h(x) = x + 2$	$m(x) = x^2 + 7x + 10$

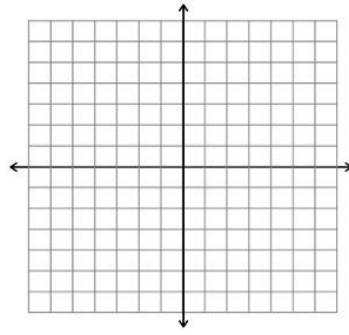a. $(f \circ g)(x)$ b. $m(h(x))$ c. $g(f(2))$ d. $(h \circ m)(1)$

8. Graph $f(x) = 2^{x-2} - 3$. List the intercepts, domain, range and asymptote

9. Graph the inverse of $f(x) = 3^x + 1$. List the intercepts, domain, range and asymptote

10. Write the following in logarithmic form

    a. $10^3 = 1000$ b. $\left(\dfrac{1}{2}\right)^{-3} = 8$

11. Write the following in exponential form

    a. $\log_5 125 = 3$ b. $\log_3 81 = 4$

12. Solve the following for x.

    a. $10^{2x-1} = 10^{x+7}$ b. $4^{2x+2} = 32^{x-5}$

13. How much money will you have in the bank if you invest $500 at continuously compounding interest for 3 years with an interest rate of 3%?

14. How many mold spores will be present in your biology lab after 24 hours if you started with 5 mold spores and their growth constant is k = .0355?

Evaluate each expression.

7) $\log_5 125$

   A) −3   B) 3
   C) 5   D) 25

8) $\log_6 \dfrac{1}{216}$

   A) 2   B) 3

   C) −3   D) $\dfrac{1}{1296}$

9) $\log_2 32$

   A) 5   B) −5
   C) 3   D) 16

10) $\log_4 \dfrac{1}{4}$

   A) $\dfrac{1}{16}$ B) −1

   C) 1   D) −4

Find the inverse of each function.

13) $y = \log 5^x$

   A) $y = \dfrac{1}{3^{-\frac{x}{5}}}$ B) $y = \log_5 10^x$

   C) $y = 4^{\frac{x}{3}}$ D) $y = 6^x - 9$

14) $y = \log_{\frac{1}{5}} x + 5$

   A) $y = 6^x - 8$ B) $y = 4^x - 8$

   C) $y = \dfrac{1}{5^{x-5}}$ D) $y = 5^{-\frac{x}{8}}$