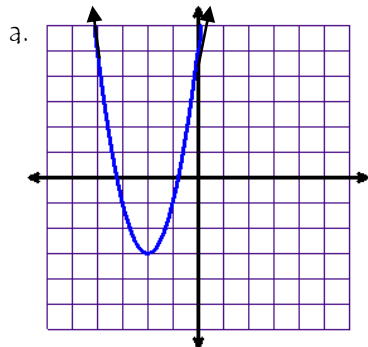


1. Solve each equation:

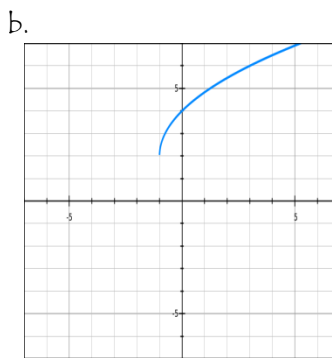
a.  $3^{2x+1} = 9^{2x-3}$

b.  $\frac{1}{4}^{-x-4} = 64^{x+1}$

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



Function  
D: \_\_\_\_\_  
R: \_\_\_\_\_  
Inverse  
D: \_\_\_\_\_  
R: \_\_\_\_\_



Function  
D: \_\_\_\_\_  
R: \_\_\_\_\_  
Inverse  
D: \_\_\_\_\_  
R: \_\_\_\_\_

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

a.  $y = \sqrt[3]{x-2} + 5$

b.  $y = (3x-2)^3 - 9$

c.  $y = \frac{3}{x-1}$

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

$f(x) = x^2 + 2, x \geq 0$

$g(x) = +\sqrt{x-2}$

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

$f(x) = 4x - 3$	$g(x) = x^2 + 7$	$h(x) = x + 2$	$m(x) = x^2 + 7x + 10$
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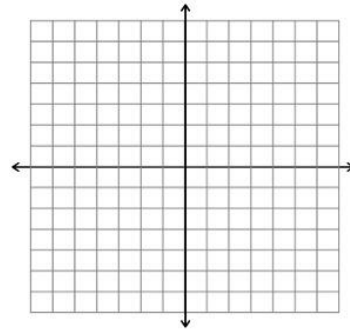
a.  $(f \circ g)(x)$

b.  $m(h(x))$

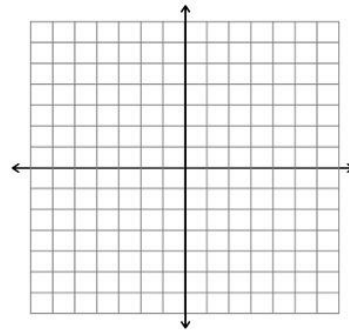
c.  $g(f(2))$

d.  $(h \circ m)(1)$

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



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



8. Write the following in logarithmic form

a.  $10^3 = 1000$                       b.  $\frac{1}{2}^{-3} = 8$

9. Write the following in exponential form

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

10. Solve the following for x.

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

11. 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%?

12. 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  $k = .0355$ ?