5B.1 - INVERSE HW Homework Guide Name:_____

GSE Algebra II Date:_____

Find the inverse of each function.

1.) $f(x) = -2x + 1$

$x = -2y + 1$

$-1 \quad -1$

$\frac{-2y}{-2} = \frac{x-1}{-2}$

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

2.) $y = \sqrt{x+1}$

$f^{-1}(x) = x^2 - 1$

3.) $f(x) = 4^x$

$x = 4^y$

$\log_4 x = \log_4 4^y$

$f^{-1}(x) = \log_4 x$

4.) $y = \frac{2x+1}{3}$

$f^{-1}(x) = \frac{3x-1}{2}$

5.) $y = \log_3(x-1)$

$3^x = 3^{\log_3(y-1)}$

$y - 1 = 3^x$

$+1 \quad +1$

$f^{-1}(x) = 3^x + 1$

6.) $y = 4^{x+2}$

$f^{-1}(x) = \log_4(x) - 2$

7.) $y = \log_2(x+2)$

$2^x = 2^{\log_2(y+2)}$

$y + 2 = 2^x$

$-2 \quad -2$

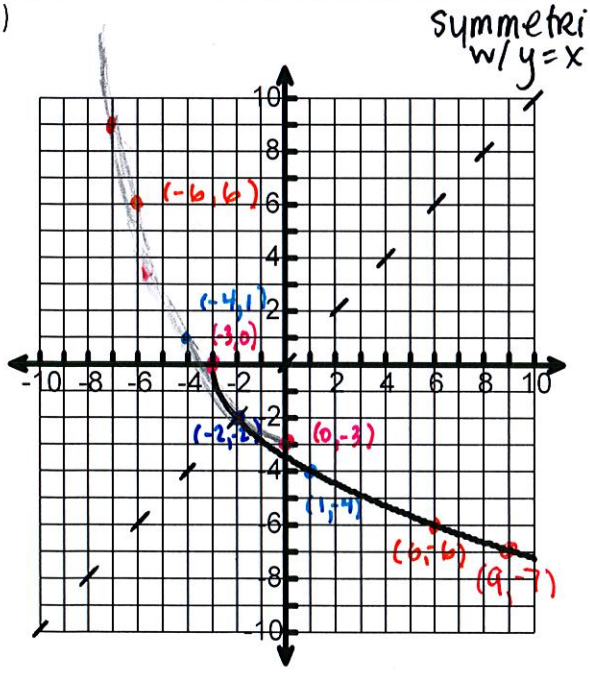
$f^{-1}(x) = 2^x - 2$

8.) $y = \sqrt[3]{x+3}$

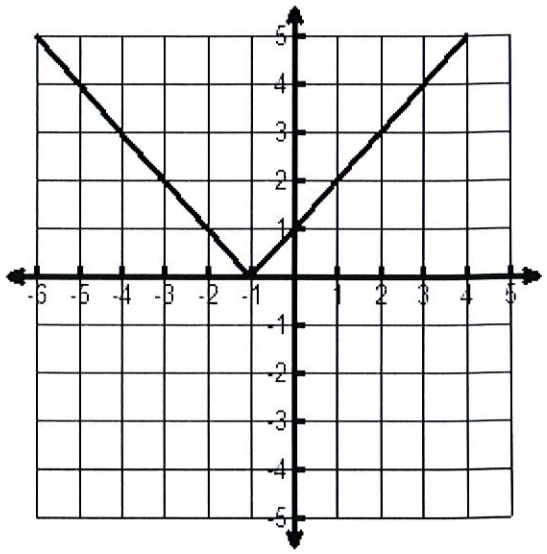
$f^{-1}(x) = x^3 - 3$

Find the inverse of each function graphically

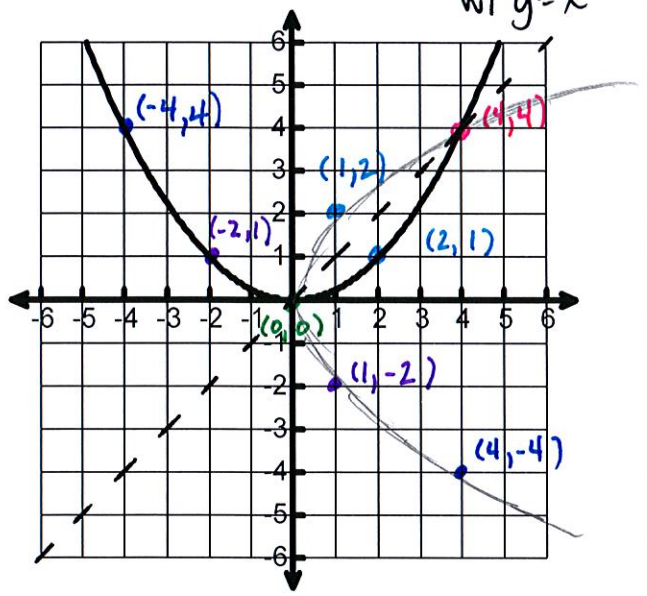
9.)



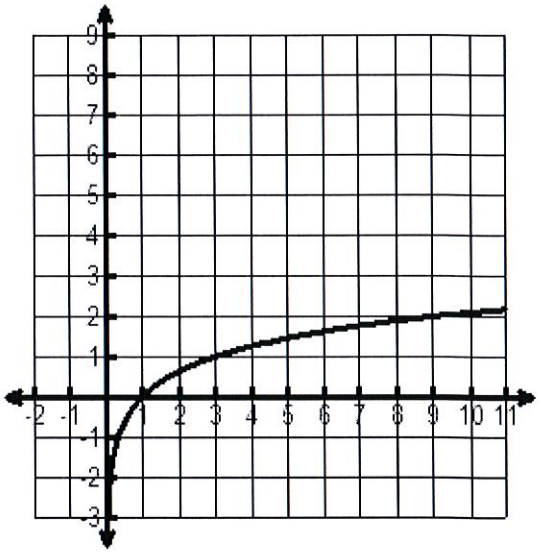
10.)



11.)



12.)



Determine whether each pair of functions are inverse functions <u>using composite functions</u>.

13.) $f(x) = 2x - 3$

$g(x) = \frac{x+3}{2}$

$f(g(x)) = 2\left(\frac{x+3}{2}\right) - 3$

$= x + 3 - 3 = x$

$g(f(x)) = \frac{(2x-3)+3}{2} = \frac{2x-3+3}{2} = \frac{2x}{2} = x$

Yes f(x) & g(x) are inverses

14.) $f(x) = 3^x$

$g(x) = \log_3 x$

Yes f(x) & g(x) are inverses

15.) $f(x) = -3x$

$g(x) = -\frac{3}{x}$

No f(x) & g(x) are not inverses

16.) $f(x) = 5^{x+1}$

$g(x) = \log_5(x+1)$

$f(g(x)) = 5^{(\log_5(x+1))+1}$

$= x + 1 + 1$

$= x + 2$

No f(x) & g(x) are <u>not</u> inverses of each other