4-6 Extension   Name_____

1. Show that f and g are inverse functions algebraically, graphically, and numerically.

Functions	Algebraically Show that $f(g(x)) = x$ and that $g(f(x)) = x$	Graphically Use DESMOS if needed	Numerically Make an input/output table for each function			
$f(x) = x - 5$ $g(x) = x + 5$			**x** / **f(x)**: -1, 0, 1, 2		**x** / **g(x)**: -6, -5, -4, -3	
$f(x) = 3x + 1$ $g(x) = \dfrac{x - 1}{3}$			**x** / **f(x)**: -1, 0, 1, 2		**x** / **g(x)**: -2, 1, 4, 7	
$f(x) = x^3 + 2$ $g(x) = \sqrt[3]{x - 2}$			**x** / **f(x)**		**x** / **g(x)**	
$f(x) = 4x$ $g(x) = \dfrac{x}{4}$			**x** / **f(x)**		**x** / **g(x)**	

2. Determine if each of the following relations has an inverse.
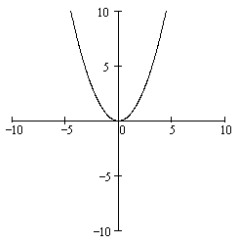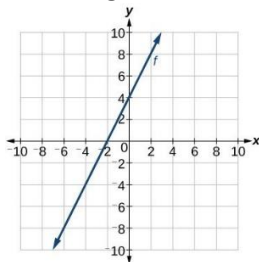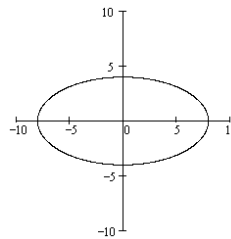

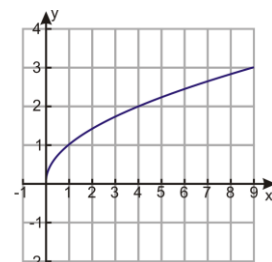Function?   Function?   Function?   Function?

Has an Inverse?   Has an Inverse?   Has an Inverse?   Has an Inverse?

Find $f^{-1}(x)$ for each of the following functions.

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

4. $f(x) = \sqrt[3]{\dfrac{x+1}{2}}$

5. $f(x) = \dfrac{x-9}{4}$

6. $f(x) = 8 + x^2, \ x \geq 0$
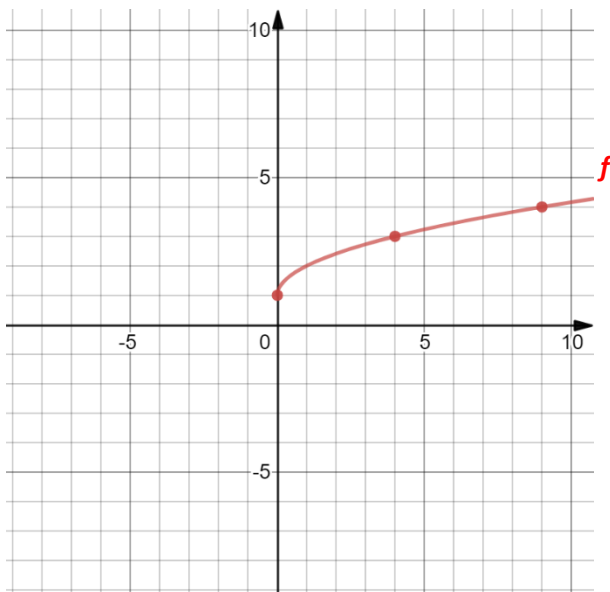
7. $f(x) = 2x^3 - 9$

8. $f(x) = (x - 4)^5$

9. $f(x) = x^5 - 4$

10. $f(x) = \dfrac{1}{4}x + 2$

Sketch the graph of $f^{-1}(x)$ on the same coordinate system as $f(x)$.

11.

12.