

Topic: Functions**Inverse Functions****I . the Inverse of Functions**

For each of the following functions, find the inverse.

1. $f(x) = 3x + 6$

$$f^{-1}(x) = \frac{x-6}{3}$$

2. $g(x) = x^2 - 4$

$$g^{-1}(x) = \sqrt{x+4}$$

3. $h(x) = \sqrt{x-7}$

$$h^{-1}(x) = x^2 + 7$$

4. $j(x) = -2x + 9$ $j^{-1}(x) = \frac{x-9}{-2}$

5. $b(x) = 2x^2 + 5$ $b^{-1}(x) = \sqrt{\frac{x-5}{2}}$

6. $d(x) = \sqrt[3]{5x+2}$

$$d^{-1}(x) = \frac{x^3-2}{5}$$

Use composition of functions to prove the functions are inverses of each other.

7. $f(x) = x^2 - 4$ and $g(x) = \sqrt{x-4}$

$$(\sqrt{x-4})^2 - 4$$

$$= x - 8$$

no

8. $f(x) = 3x - 6$ and $g(x) = \frac{1}{3}x + 2$

$$3(\frac{1}{3}x + 2) - 6$$

$$= x$$

$$\frac{1}{3}(3x - 6) + 2$$

$$= x$$

yes