

## 4.1 WS 2

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Use the composition of functions to determine whether  $f$  and  $g$  are inverses of one another.

1.  $f(x) = -2x + 5$ ;  $g(x) = \frac{x-5}{-2}$

2.  $f(x) = \sqrt[3]{x+5}$ ;  $g(x) = x^3 - 5$

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

4.  $f(x) = \frac{4}{5}x + 6$ ;  $g(x) = \frac{5}{4}x - \frac{15}{2}$

Find the inverse function of the one-to-one function given.

5.  $f(x) = \{(-2,1), (-1,4), (0,5), (2,9), (5,15)\}$

6.  $g(x) = \{(-2,30), (-1,11), (0,4), (1,3), (2,2)\}$

**Find the inverse of each function, then state the domain and range of  $f^{-1}(x)$ .**

7.  $f(x) = 3x - 5$

8.  $f(x) = \frac{x-5}{2}$

9.  $f(x) = x^3 + 3$

10.  $f(x) = \frac{2x-1}{x+3}$

11. The function  $s(x) = 2x + 24$  can be used to convert a U.S. women's shoes size into an Italian women's shoe size. Determine the function  $s^{-1}(x)$  that can be used to convert an Italian women's shoe size to its equivalent U.S. shoe size.

12. A clothing merchant uses the function  $S(x) = \frac{3}{2}x + 18$  to determine the retail selling price  $S$ , in dollars, of a winter coat for which she has paid a wholesale price of  $x$  dollars.

a. The merchant paid a wholesale price of \$96 for a winter coat. Use  $S$  to determine the retail selling price she will charge for this coat.

b. Find  $S^{-1}$  and use it to determine the merchant's wholesale price for a coat that retails at \$399.