

Determine whether each pair of functions are inverse functions.

1. $f(x) = 4x - 9$, $g(x) = \frac{x-9}{4}$

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

If $f(x) = 2x - 4$ and $g(x) = x^2 + 3$, find each value.

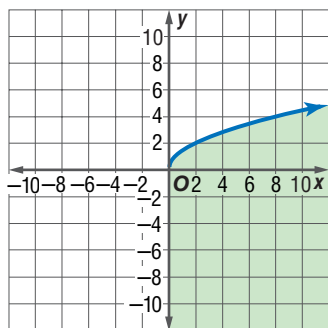
3. $(f + g)(x)$

4. $(f - g)(x)$

5. $(f \cdot g)(x)$

6. $\left(\frac{f}{g}\right)(x)$

7. **MULTIPLE CHOICE** Which inequality represents the graph below?



A $y \geq \sqrt{2x}$

B $y \leq \sqrt{2x}$

C $y < 2\sqrt{x}$

D none of these

Solve each equation.

8. $\sqrt{b+15} = \sqrt{3b+1}$

9. $\sqrt{2x} = \sqrt{x-4}$

10. $\sqrt[4]{y+2} + 9 = 14$

11. $\sqrt[3]{2w-1} + 11 = 18$

12. $\sqrt{4x+28} = \sqrt{6x+38}$

13. $1 + \sqrt{x+5} = \sqrt{x+12}$

Simplify.

14. $\sqrt{175}$

15. $(5 + \sqrt{3})(7 - 2\sqrt{3})$

16. $(6 - 4\sqrt{2})(-5 + \sqrt{2})$

17. $3\sqrt{6} + 5\sqrt{54}$

18. $\frac{9}{5 - \sqrt{3}}$

19. $\frac{16}{-2 + \sqrt{5}}$

20. $(9^{\frac{1}{2}} \cdot 9^{\frac{2}{3}})^{\frac{1}{6}}$

21. $11^{\frac{1}{2}} \cdot 11^{\frac{7}{3}} \cdot 11^{\frac{1}{6}}$

22. $\sqrt[6]{256s^{11}t^{18}}$

23. $\frac{b^{\frac{1}{2}}}{b^{\frac{3}{2}} - b^{\frac{1}{2}}}$

Solve each inequality.

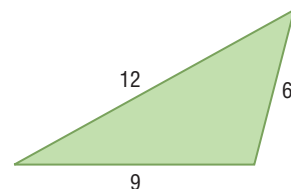
24. $\sqrt{3x+1} \geq 5$

25. $3 + \sqrt{5x-1} < 11$

26. $1 - \sqrt{2y+1} < -6$

27. **SKYDIVING** The approximate time t in seconds that it takes an object to fall a distance of d feet is given by $t = \sqrt{\frac{d}{16}}$. Suppose a parachutist falls 11 seconds before the parachute opens. How far does the parachutist fall during this time period?

28. **GEOMETRY** The area of a triangle with sides of length a , b , and c is given by



$\sqrt{s(s-a)(s-b)(s-c)}$,

where $s = \frac{1}{2}(a+b+c)$. If the lengths of the sides of a triangle are 6, 9, and 12 feet, what is the area of the triangle expressed in radical form?