

11-2 EXERCISES

A

1. Evaluate the expression $\sqrt{3x - 12}$ for $x = 4$. Is the result a real number? 0; Yes
2. Evaluate the expression $\sqrt{8 - 4y}$ for $y = 10$. Is the result a real number? $\sqrt{-32}$; No
3. Evaluate $\sqrt{x + 12}$ for $x = -6$. Is the result a real number? $\sqrt{6}$; Yes
4. Evaluate $\sqrt{3y + 12}$ for $y = -5$. Is the result a real number? $\sqrt{-3}$; No

Determine the values for the variable that will make each expression a real number.

5. $\sqrt{5x}$ 6. $\sqrt{3y}$ 7. $\sqrt{t - 5}$
8. $\sqrt{y - 8}$ 9. $\sqrt{y + 8}$ 10. $\sqrt{x + 6}$
11. $\sqrt{x + 20}$ 12. $\sqrt{m - 18}$ 13. $\sqrt{2y - 7}$
14. $\sqrt{3x + 8}$ 15. $\sqrt{t^2 + 5}$ 16. $\sqrt{y^2 + 1}$

Simplify.

17. $\sqrt{t^2}$ 18. $\sqrt{x^2}$ 19. $\sqrt{9x^2}$ 20. $\sqrt{4a^2}$
21. $\sqrt{(-7)^2}$ 22. $\sqrt{(-5)^2}$ 23. $\sqrt{(-4d)^2}$ 24. $\sqrt{(-3b)^2}$
25. $\sqrt{(x + 3)^2}$ 26. $\sqrt{(x - 7)^2}$ 27. $\sqrt{a^2 - 10a + 25}$
28. $\sqrt{x^2 + 2x + 1}$ 29. $\sqrt{4a^2 - 4a + 1}$ 30. $\sqrt{9a^2 - 12a + 4}$

B

Solve.

31. $\sqrt{x^2} = 6$ 32. $\sqrt{y^2} = -7$ 33. $-\sqrt{x^2} = -3$
34. $t^2 = 49$ 35. $\sqrt{(x - 3)^2} = 5$ 36. $\sqrt{4a^2 - 12a + 9} = 3$

Simplify.

37. $\sqrt{(3a)^2}$ 38. $\sqrt{(4a)^2(4a)^2}$ 39. $\sqrt{\frac{144x^8}{36y^6}}$
40. $\sqrt{\frac{y^{12}}{8100}}$ 41. $\sqrt{\frac{169}{m^{16}}}$ 42. $\sqrt{\frac{p^2}{3600}}$

43. Determine the values for the variable that will make each expression a real number.

- a. $\sqrt{m(m + 3)}$ $m \geq 0$ or $m \leq -3$ b. $\sqrt{x^2(x - 3)}$ $x \geq 3$ or $x = 0$

44. **Critical Thinking** Given a and c , what must be true of b to make $\sqrt{b^2 - 4ac}$ a real number?

- a. $a = -3, c = 2$ Any real number b. $a = 2, c = 8$ $b \leq -8$ or $b \geq 8$

Assignment Guide

Minimum: 1-30 e/o, MR

Regular: 1-43 e/o, 44, MR

Advanced: 1-43 m3, 44-49, MR

ADDITIONAL ANSWERS

Exercises

5. $x \geq 0$ 6. $y \geq 0$
7. $t \geq 5$ 8. $y \geq 8$
9. $y \geq -8$ 10. $x \geq -6$
11. $x \geq -20$ 12. $m \geq 18$
13. $y \geq \frac{7}{2}$ 14. $x \geq -\frac{8}{3}$
15. Any value
16. Any value
17. $|t|$
18. $|x|$
19. $3|x|$
20. $2|a|$
21. 7
22. 5
23. $4|d|$
24. $3|b|$
25. $|x + 3|$
26. $|x - 7|$
27. $|a - 5|$
28. $|x + 1|$
29. $|2a - 1|$
30. $|3a - 2|$
31. 6, -6
32. No value
33. 3, -3
34. 7, -7
35. -2, 8
36. 0, 3
37. $3|a|$
38. $16a^2$
39. $\frac{2x^4}{|y^2|}$
40. $\frac{y^6}{90}$
41. $\frac{13}{m^8}$
42. $\frac{|p|}{60}$