

Chapter 8 answers

8.1

1. 2 3. -2 5. 1 7. 8 9. not a real number 11. $\frac{1}{4}$ 13. $\frac{4}{25}$ 15. $x^{\frac{3}{4}}$
 17. $2a^{\frac{1}{6}}$ 19. $x^{\frac{1}{4}}$ 21. $b^{\frac{1}{3}}c^{\frac{1}{2}}$ 23. $5x^{\frac{1}{4}}$ 25. $\frac{1}{a^{\frac{3}{4}}b^{\frac{1}{2}}}$ 27. $\frac{x^2}{y^3z}$
 29. $\frac{yz^{\frac{1}{4}}}{x^{\frac{1}{3}}}$ 31. $ab^{\frac{1}{4}}$ 33. $\frac{1}{x^{\frac{29}{42}}}$ 35. $\frac{3a^{\frac{1}{6}}}{b^{\frac{1}{9}}}$ 37. $\frac{4x^{\frac{1}{3}}}{y^{\frac{1}{2}}z^{\frac{2}{9}}}$ 39. $\frac{2b^{\frac{1}{4}}}{3a^{\frac{4}{3}}}$
 41. $\frac{16}{9m^{\frac{1}{3}}n^2}$ 43. $\frac{xz^2}{1296y^3}$ 45. $\frac{24x^{\frac{5}{21}}y^{\frac{1}{3}}}{7}$ 47. $\frac{49a^4}{b}$ 49. $\frac{3b}{2a}$
 51. $\frac{3b^{\frac{1}{6}}}{a^{\frac{1}{8}}}$ 53. $\frac{2}{x^{\frac{1}{3}}y^{\frac{7}{12}}}$ 55. $\frac{12x^{\frac{1}{2}}z^{\frac{7}{3}}}{y^{\frac{1}{3}}}$ 57. $\sqrt{2}$ 59. $\sqrt[3]{x^2}$
 61. $2y\sqrt{x^3}$ 63. $\sqrt{(x+y)^3}$ 65. $\sqrt{12a^4b}$ 67. $y^{\frac{3}{2}}$ 69. $2x(yz)^{\frac{1}{3}}$
 71. $(4a^2b^3)^{\frac{1}{4}}$ 73. $-2xy^{\frac{3}{2}}z^{\frac{4}{3}}$ 75. $(2x+3y^3)^{\frac{1}{5}}$

8.2

1. x 3. a^3 5. xy 7. a^2b^2 9. $x^2y^3z^4$ 11. $2x^2y$
 13. $-3a^3b^2$ 15. $2x^8y^4$ 17. $3x^4y^2z$ 19. $12a^3b^5c^7$ 21. $-2xy^6z^9$ 23. $4x^3y^9z^4$
 25. $2\sqrt{2}$ 27. $3\sqrt{2}$ 29. $2\sqrt[3]{5}$ 31. $2\sqrt[4]{3}$ 33. $3\sqrt{6}$ 35. $2\sqrt[3]{30}$
 37. $a\sqrt{a}$ 39. $x^2\sqrt[3]{x^2}$ 41. $xy^2\sqrt{xy}$ 43. $a^2b^3\sqrt[3]{b}$ 45. $xy^2\sqrt[5]{x^2y^3}$
 47. $xy^2\sqrt[5]{xy^2}$ 49. $2x^4y^5\sqrt{2x}$ 51. $-xy^2\sqrt[3]{xy^2}$ 53. $2x^3y^3\sqrt[4]{3xy^3}$
 55. $-x^3y^3z^6\sqrt[3]{100xyz^2}$ 57. $5z^2\sqrt{2xyz}$ 59. $2x^2z^2\sqrt{15yz}$
 61. $-2x^2y^2\sqrt[5]{9x^4y^2z}$ 63. $3x^6y^5z^6\sqrt[3]{12x^2y^2}$ 65. $x^2y^3z\sqrt[4]{90}$
 67. $2a^3b^5c^2\sqrt[6]{2a^2c^5}$ 69. $x^9yz^5\sqrt[7]{y^5z^6}$

8.3

1. $8\sqrt{2}$ 3. $8\sqrt{15}$ 5. $7x\sqrt[3]{y^2}$ 7. $13\sqrt[4]{12x^2}-7\sqrt{x}$ 9. $5\sqrt[3]{17}+6\sqrt[3]{2}$
 11. $5\sqrt{2}$ 13. $\sqrt[3]{2x}$ 15. $7xy\sqrt{x}$ 17. $-\sqrt[4]{3}$ 19. $-t\sqrt[3]{2t}$ 21. $10a\sqrt{5a}$
 23. $-14xy\sqrt{2y}$ 25. $12ab^2\sqrt{3ab}+5ab\sqrt{3ab}$ 27. $10b^2\sqrt[3]{2b^2}$
 29. $-a\sqrt[4]{2a}$ 31. $\sqrt{2}-20\sqrt{5}$ 33. $-27a\sqrt{2}$ 35. $3r^3s^2\sqrt{rs}$
 37. $a^2b\sqrt[3]{4ab^2}-12a^2b\sqrt[3]{ab^2}$ 39. $18xy\sqrt{y}-2xy\sqrt{2x}$ 41. $7y\sqrt[3]{2x}$
 43. $2ab\sqrt[3]{4b^2}-9ab\sqrt[3]{6ab}+ab\sqrt[3]{2ab^2}$ 45. $6xy\sqrt[4]{3x}-x^2y\sqrt[4]{3x}-xy\sqrt[3]{3x}$
 47. $17x\sqrt[3]{3x}-3x^2$ 49. $14xy^2\sqrt[3]{5x^2y^2}-x^2y^3\sqrt{5}$

8.4

1. 4 3. $xy^3\sqrt{x}$ 5. $2\sqrt[3]{4x^2}$ 7. $3t\sqrt[3]{3t}$ 9. $4x\sqrt[3]{x^2}$
11. $5x^3y^2\sqrt{2y}$ 13. $3xy\sqrt[3]{6x^2}$ 15. $3nm\sqrt[5]{n}$ 17. $a^2b^2\sqrt[4]{108}$
19. $3b\sqrt[4]{3a^3}$ 21. $y+4\sqrt{y}$ 23. $3-2\sqrt{3}$ 25. $2\sqrt{2xy}-2y$
27. $5x+12\sqrt{5x}+36$ 29. $36-16\sqrt{5}$ 31. $x^2y+2x\sqrt{yz}+z$
33. $a-4\sqrt{ab}+4b$ 35. $2x+\sqrt{x}-6$ 37. $2-4\sqrt{2}$
39. $\alpha-\beta\sqrt{\alpha\chi}-2\beta^2\chi$ 41. $2p+\sqrt{pq}-6q$ 43. $a-\sqrt{ab}-6b$ 45. $x-2$
47. $4a-b$ 49. $2x+x\sqrt{x}-1$ 51. $a\sqrt{a}+a\sqrt{b}+2\sqrt{ab}+a+b$
53. $x+2\sqrt{xy}+x\sqrt{y}+y\sqrt{x}+y$ 55. $y-5\sqrt[3]{y}+2\sqrt[3]{y^2}-10$
57. $5x+\sqrt[3]{x}-10\sqrt[3]{x^2}-2$ 59. $2x-2\sqrt[4]{2x}-\sqrt[4]{8x^3}+2$ 61. $x+5+4\sqrt{x+1}$
63. $2x-2-2\sqrt{x(x-2)}$ 65. $5x-2\sqrt{(3x-1)(2x+1)}$ 67. $4x-1+2\sqrt{2x(2x-1)}$

8.5

1. $\frac{2}{3}$ 3. $\frac{3}{4}$ 5. $\frac{1}{3}$ 7. $\frac{3\sqrt{2}}{y}$ 9. $\frac{2y\sqrt[3]{4y^2}}{x}$ 11. $\frac{2b^2\sqrt[4]{b^3}}{a^2}$ 13. $\frac{ab^4\sqrt[3]{a^3b}}{x^2y^3}$
15. $\frac{yz^2\sqrt[3]{yz^2}}{2x^2}$ 17. $\frac{3z^2\sqrt{z}}{4x^2y^3}$ 19. $\frac{1}{xy^3z^9}$ 21. $\frac{2x\sqrt{2y}}{y}$ 23. $\frac{3a^2\sqrt{6b}}{2b^2}$ 25. $\frac{\sqrt[3]{60x^2y}}{3y}$
27. $\frac{2x\sqrt[3]{9xy^2}}{3y^3}$ 29. $\frac{y\sqrt[4]{9x^3y}}{3x}$ 31. $\frac{\sqrt[3]{162x^2y^2}}{3y}$ 33. $\frac{\sqrt[3]{4x^2y^2}}{xy}$ 35. $\frac{5\sqrt[3]{3x^2y}}{3xy}$ 37. $\sqrt[3]{x^2}$
39. $\frac{a^2\sqrt[4]{a^3b^2}}{b}$ 41. $\frac{\sqrt[4]{2t^3}}{t}$ 43. $\frac{2\sqrt{2abd}}{c^2d}$ 45. $\frac{y^2\sqrt[3]{9x^2y^2}}{9x^2}$ 47. $\frac{2x^2y\sqrt[4]{xyz^3}}{z}$ 49. $\frac{z\sqrt[3]{180xz^2}}{3xy^2}$
51. $\frac{3y^3z\sqrt[3]{4x^2z^2}}{2x}$ 53. $\frac{2uv\sqrt[4]{2vw^3}}{w}$ 55. $\frac{3c\sqrt[4]{8b^3c^3}}{2ab^3}$ 57. $\frac{3x^2z^3\sqrt[4]{120xy^2z^3}}{2y^2}$
59. $3xy^2\sqrt[7]{4x^5y^4}$ 61. $-\sqrt{2}-3$ 63. $\frac{x\sqrt{x-x}}{x-1}$ 65. $-\sqrt{2}-\sqrt{3}$ 67. $\frac{5\sqrt{x+10}\sqrt{y}}{x-4y}$
69. $\frac{x\sqrt{15-x}\sqrt{3}}{4}$ 71. $\frac{4t+4\sqrt{t}+1}{4t-1}$ 73. $\frac{y^3-y\sqrt{y+y^2}-\sqrt{y}}{y^4-y}$ 75. $\frac{6\sqrt{xy}+9y}{4x-9y}$ 77. $\frac{x+8\sqrt{x}+12}{x-36}$
79. $\frac{6x-13\sqrt{xy}+5y}{9x-25y}$

8.6

1. $-i$ 3. $-i$ 5. i 7. 1 9. i 11. $2i$ 13. $5i$ 15. $2i\sqrt{2}$ 17. $2i\sqrt{15}$
19. $2+2i$ 21. $11-i$ 23. $-11+7i$ 25. $-2-10i$ 27. 35 29. 1
31. $9+2i$ 33. $-4+2i\sqrt{2}$ 35. -10 37. $20-12i$ 39. $2+8i$
41. $\sqrt{6}+2i$ 43. $-3-2\sqrt{3}$ 45. $-24+23i$ 47. $26+7i$ 49. $-12-5i$
51. $29-11i$ 53. $21-20i$ 55. $3\sqrt{2}-4-2i\sqrt{2}-6i$ 57. $2+11i$ 59. $-\frac{3}{2}+\frac{5}{2}i$
61. $\frac{1}{2}+\frac{1}{2}i$ 63. $\frac{8}{5}-\frac{1}{5}i$ 65. $\frac{5}{13}+\frac{1}{13}i$ 67. $\frac{9}{2}-\frac{5}{2}i$ 69. $-\frac{23}{29}-\frac{14}{29}i$ 71. $\frac{1}{2}-3i$
73. $-\frac{1}{13}+\frac{31}{13}i$ 75. $\frac{2}{3}$ 77. $\frac{3\sqrt{2}}{26}+\frac{2}{13}+\frac{\sqrt{2}}{13}i-\frac{3}{13}i$

8.7

1. {48} 3. {14} 5. {15/4} 7. {-1, 9} 9. {1,3} 11. {10}
13. {32} 15. {33/4} 17. {-2, 2} 19. {-4, 2} 21. {9} 23. {5}

25. $\{-1, 15\}$ 27. $\{4\}$ 29. $\{1/36\}$ 31. $\{7\}$ 33. $\{9/5\}$ 35. $\{3/32\}$
37. $\{81\}$ 39. $\{1, 9\}$ 41. $\{3, 7\}$ 43. $\{1\}$ 45. $\{-1\}$ 47. $\{2\}$
49. $\{-1\}$ 51. $d = \frac{v^2}{64}$ 53. $a = \frac{v^2}{2s}$ 55. $g = \frac{2d}{t^2}$ 57. $x = (y - k)^2 + h$
59. $c = \sqrt{34}$ 61. $a = \sqrt{370} m$ 63. 6 ft 65. 11.2 in. 67. 22.4 ft.
69. 351.6 ft. 71. 28.2 ft. 73. 13 ft. 75. 250 mi. 77. 500 units 79. 321.5 km