RADICALES SOLUCIONES

1. $\sqrt{9} = \pm 3$ porque $3^2=9$ y $(-3)^2=9$

2. $\sqrt{81} = \pm 9$ porque $9^2=81$ y $(-9)^2=81$

3. $\sqrt{-25} = \nexists$ porque el cuadrado de cualquier número es positivo

4. $\sqrt{-36} = \nexists$ porque el cuadrado de cualquier número es positivo

5. $\sqrt[3]{8} = 2$ porque $2^3=8$

6. $\sqrt[3]{125} = 5$ porque $5^3=125$

7. $\sqrt[3]{-8} = -2$ porque $(-2)^3=8$

8. $\sqrt{0{,}25} = 0{,}5$ porque $0{,}5^2=0{,}25$

9. $\sqrt{0{,}09} = 0{,}3$ porque $0{,}3^2=0{,}09$

10. $\sqrt{100} = 10$

11. $\sqrt[4]{10000} = 10$

12. $\sqrt[4]{81} = 3$

13. $\sqrt[5]{32} = 2$

14. $\sqrt{0} = 0$

15. $\sqrt[4]{0} = 0$

16. $\sqrt[5]{32} = 2$

17. $\sqrt[3]{-1} = -1$

18. $\sqrt[3]{-125} = -5$

19. $\sqrt[5]{-32} = -2$

20. $\sqrt{0{,}01} = 0{,}1$

21. $\sqrt[3]{27} = 3$

22. $\sqrt{16} = 4$

23. $\sqrt{1} = 1$

24. $\sqrt[3]{-27} = -3$

25. $\sqrt[3]{1000} = 10$

26. $\sqrt[4]{16} = 2$

27. $\sqrt[4]{1} = 1$

28. $\sqrt[6]{64} = 2$

29. $\sqrt[3]{0} = 0$

30. $\sqrt[7]{0} = 0$

31. $\sqrt[15]{1} = 1$

32. $\sqrt{-1} = \nexists$

33. $\sqrt{-625} = \nexists$

34. $\sqrt[4]{625} = 5$

35. $\sqrt[4]{-16} = \nexists$

36. $\sqrt{0{,}04} = \frac{1}{5} = 0{,}2$

37. $\sqrt{0{,}16} = \frac{2}{5} = 0{,}4$

38. $\sqrt[3]{0{,}001} = \frac{1}{10} = 0{,}1$

39. $\sqrt[3]{0{,}125} = \frac{1}{2} = 0{,}5$

40. $\sqrt[3]{0{,}008} = \frac{1}{5} = 0{,}2$

41. $\sqrt{400} = 20$

42. $\sqrt[4]{160000} = 20$

43. $\sqrt{\frac{9}{4}} = \frac{3}{2}$

44. $\sqrt[3]{\frac{125}{27}} = \frac{5}{3}$

45. $\sqrt[4]{\frac{81}{16}} = \frac{3}{2}$

46. $\sqrt[3]{-0{,}125} = -\frac{1}{2} = -0{,}5$

47. $\sqrt[3]{-0{,}008} = -\frac{1}{5} = -0{,}2$

48. $\sqrt[3]{8000} = 20$

49. $\sqrt[3]{-8000} = -20$

50. $\sqrt[3]{\frac{27}{8}} = \frac{3}{2}$

51. $\sqrt{\frac{49}{36}} = \frac{7}{6}$

52. $\sqrt[3]{\frac{8}{125}} = \frac{2}{5}$

RADICALES SOLUCIONES

1. $\sqrt[3]{216000} = 60$ **2.** $\sqrt{5184} = 72$ **3.** $\sqrt[6]{46656} = 6$ **4.** $\sqrt[5]{5153632} = 22$

RADICALES: simplificar SOLUCIONES

1. $\sqrt[8]{a^2} = \sqrt[4]{a}$ **2.** $\sqrt[5]{3^5} = 3$ **3.** $\sqrt[4]{5^{32}} = 5^8$ **4.** $\sqrt[32]{3^4} = \sqrt[8]{3}$ **5.** $\sqrt[6]{b^{66}} = b^{11}$

6. $\sqrt{a^8} = a^4$ **7.** $\sqrt[24]{b^{15}} = \sqrt[8]{b^5}$ **8.** $\sqrt[8]{a^8} = a$ **9.** $\sqrt[10]{2^4} = \sqrt[5]{4}$ **10.** $\sqrt[66]{b^6} = \sqrt[11]{b}$

11. $\sqrt[10]{81} = \sqrt[5]{9}$ **12.** $\sqrt[12]{1024} = \sqrt[6]{32}$ **13.** $\sqrt[6]{125} = \sqrt{5}$ **14.** $\sqrt[9]{64} = \sqrt[3]{4}$ **15.** $\sqrt[4]{6561} = 9$

RADICALES: extraer factores SOLUCIONES

1. $\sqrt[4]{a^4b} = a\sqrt[4]{b}$ **2.** $\sqrt[3]{a^3b^2} = a\sqrt[3]{b^2}$ **3.** $\sqrt{18} = 3\sqrt{2}$ **4.** $\sqrt[3]{a^5} = a\sqrt[3]{a^2}$

5. $\sqrt{a^4cd^2} = a^2d\sqrt{c}$ **6.** $\sqrt[3]{a^6} = a^2$ **7.** $\sqrt[3]{a^7} = a^2\sqrt[3]{a}$ **8.** $\sqrt[3]{a^8} = a^2\sqrt[3]{a^2}$

9. $\sqrt[3]{a^9} = a^3$ **10.** $\sqrt[3]{a^{10}} = a^3\sqrt[3]{a}$ **11.** $\sqrt[3]{a^{11}} = a^3\sqrt[3]{a^2}$ **12.** $\sqrt[3]{a^{12}} = a^4$

13. $\sqrt[3]{a^{16}} = a^5\sqrt[3]{a}$ **14.** $\sqrt[3]{2^{20}} = 64\sqrt[3]{4}$ **15.** $\sqrt[6]{2^6a^9b^3} = 2a\sqrt{ab}$ **16.** $\sqrt[4]{16a^5b^7} = 2ab\sqrt[4]{ab^3}$

17. $\sqrt{98a^2b^4c} = 7ab^2\sqrt{2c}$ **18.** $\sqrt{600} = 10\sqrt{6}$ **19.** $\sqrt[5]{224} = 2\sqrt[5]{7}$

20. $\sqrt[3]{250} = 5\sqrt[3]{2}$ **21.** $\sqrt[3]{432} = 6\sqrt[3]{2}$ **22.** $\sqrt{50} = 5\sqrt{2}$ **23.** $\sqrt{180} = 6\sqrt{5}$

24. $\sqrt[3]{280} = 2\sqrt[3]{35}$ **25.** $\sqrt[5]{243} = 3$ **26.** $\sqrt[4]{a^{14}b} = a^3\sqrt[4]{a^2b}$ **27.** $\sqrt[3]{a^5b^4} = ab\sqrt[3]{a^2b}$

28. $\sqrt[3]{a^7b^{12}c^{16}} = a^2b^4c^5\sqrt[3]{ac}$ **29.** $\sqrt{3a^5b^3c^2} = a^2bc\sqrt{3ab}$ **30.** $\sqrt{49ab^3c^4} = 7bc^2\sqrt{ab}$

RADICALES: simplificar y extraer SOLUCIONES

1. $\sqrt[4]{m^6n^4} = mn\sqrt{m}$ **2.** $\sqrt[6]{x^6y^9z^{12}k^{15}} = xyz^2k^2\sqrt{yk}$ **3.** $\sqrt{2a^4b^6c^2} = a^2b^3c\sqrt{2}$

4. $\sqrt[5]{5x^{14}y^{10}z^5} = x^2y^2z\sqrt[5]{5x^4}$ **5.** $\sqrt[5]{5a^{14}b^{10}c^5} = a^2b^2c\sqrt[5]{5a^4}$ **6.** $\sqrt[3]{27x^2y^3z^4k^5} = 3yzk\sqrt[3]{x^2zk^2}$

7. $\sqrt{16a^3b^4c^5} = 4ab^2c^2\sqrt{ac}$ **8.** $\sqrt{8x^4y^3z^5} = 2x^2yz^2\sqrt{2yz}$

RADICALES: introducir factores SOLUCIONES

1. $3\sqrt{7} = \sqrt{63}$ **2.** $11\sqrt{2} = \sqrt{242}$ **3.** $2\sqrt[4]{12} = \sqrt[4]{192}$ **4.** $5\sqrt[3]{20} = \sqrt[3]{2500}$

5. $6\sqrt{5} = \sqrt{180}$ **6.** $a^2\sqrt[3]{b} = \sqrt[3]{a^6b}$ **7.** $b\sqrt[3]{a} = \sqrt[3]{b^3a}$ **8.** $xy\sqrt{2x} = \sqrt{2x^3y^2}$

9. $5\sqrt{7} = \sqrt{175}$ **10.** $2\sqrt[5]{25} = \sqrt[5]{800}$ **11.** $4\sqrt[3]{6} = \sqrt[3]{384}$ **12.** $3\sqrt[4]{3} = \sqrt[4]{243}$

RADICALES: producto y cociente SOLUCIONES

1. $\sqrt{15}.\sqrt{30} = 15\sqrt{2}$
2. $\sqrt[3]{4}.\sqrt[3]{54} = 6$
3. $\sqrt{3}.\sqrt{12} = 6$
4. $\sqrt[3]{9}.\sqrt[3]{15} = 3\sqrt[3]{5}$
5. $\sqrt[5]{a^3}.\sqrt[5]{b^2} = \sqrt[5]{a^3b^2}$
6. $\sqrt[3]{-3y^2}.\sqrt[3]{36} = -3\sqrt[3]{4y^2}$
7. $\sqrt[3]{8x^3}.\sqrt[3]{2x^2y^2} = 2x\sqrt[3]{2x^2y^2}$
8. $\sqrt{3}.\sqrt{3} = 3$
9. $\sqrt[3]{a^2}.\sqrt[3]{a^4} = a^2$
10. $\sqrt[6]{2^5}.\sqrt[6]{2} = 2$
11. $\sqrt[5]{2}.\sqrt[5]{-16} = -2$
12. $\sqrt[4]{a^2b}.\sqrt[4]{a^5b^3} = ab\sqrt[4]{a^3}$
13. $\sqrt{3}.\sqrt{2}.\sqrt{8} = 4\sqrt{3}$
14. $\sqrt[3]{6}.\sqrt[3]{4}.\sqrt[3]{12} = 2\sqrt[3]{36}$
15. $\sqrt[3]{a^2}.\sqrt[3]{a} = a$
16. $\dfrac{\sqrt{625a^2}}{\sqrt{25}} = 5a$
17. $\dfrac{\sqrt{32}}{\sqrt{50}} = \dfrac{4}{5}$
18. $\dfrac{5\sqrt{9a^3b}}{3\sqrt{25a}} = a\sqrt{b}$
19. $\dfrac{\sqrt[4]{324a^7}}{\sqrt[4]{256a}} = \dfrac{3a}{2}\sqrt{\dfrac{a}{2}}$
20. $\dfrac{\sqrt[10]{a^2b}}{\sqrt[10]{a^3b^5}} = \sqrt[10]{\dfrac{1}{ab^4}}$
21. $\dfrac{\sqrt{2}}{\sqrt{50}} = \dfrac{1}{5}$
22. $\dfrac{\sqrt{x^3y^4}}{\sqrt{x^2y^2}} = y\sqrt{x}$
23. $\dfrac{\sqrt[3]{5^3.7}}{\sqrt[3]{7^5}} = \dfrac{5}{7}\sqrt[3]{\dfrac{1}{7}} = \dfrac{5}{7\sqrt[3]{7}}$
24. $\sqrt{\dfrac{12}{7}}.\sqrt{\dfrac{21}{9}} = 2$
25. $\sqrt{\dfrac{2}{5}}.\sqrt{\dfrac{15}{16}} = \dfrac{1}{2}\sqrt{\dfrac{3}{2}} = \dfrac{\sqrt{3}}{2\sqrt{2}} = \dfrac{\sqrt{6}}{4}$
26. $\sqrt[3]{a^2b^2}.\sqrt[3]{a^4bc^4} = a^2bc\sqrt[3]{c}$
27. $\sqrt[4]{a^2bc}.\sqrt[4]{a^4b^9c^3} = ab^2c\sqrt{ab}$
28. $\sqrt{5x^2}.\sqrt{35x} = 5x\sqrt{7x}$
29. $\sqrt{b^5}.\sqrt{bx^3a^7} = b^3xa^3\sqrt{xa}$
30. $\sqrt{\dfrac{1}{7x^3y^2}}.\sqrt{14x^5y^7} = xy^2\sqrt{2y}$
31. $\dfrac{\sqrt{x^2}\sqrt{x^2y}\sqrt{y^3}}{\sqrt{x^2y^3}\sqrt{xy}} = \sqrt{x}$
32. $\dfrac{\sqrt{6x}\sqrt{10x^3y}}{\sqrt{3x^5y}\sqrt{25xy^4}} = \dfrac{2}{xy^2}\sqrt{\dfrac{1}{5}} = \dfrac{2}{xy^2\sqrt{5}}$
33. $\sqrt{\dfrac{2x^4}{75y^5}}\sqrt{\dfrac{10x^5}{3y}} = \dfrac{2x^4}{3y^3}\sqrt{\dfrac{x}{5}} = \dfrac{2x^4\sqrt{5x}}{15y^3}$

RADICALES: potencia y raíz SOLUCIONES

1. $\left(\sqrt[5]{3}\right)^5 = 3$
2. $\left(\sqrt[6]{2^4}\right)^3 = 4$
3. $\left(3\sqrt{2}\right)^2 = 18$
4. $\left(\sqrt[3]{18}\right)^2 = 3\sqrt[3]{12}$
5. $\left(\sqrt[3]{2ab^2}\right)^2 = b\sqrt[3]{4a^2b}$
6. $\sqrt[5]{\sqrt[3]{x^{10}}} = \sqrt[3]{x^2}$
7. $\sqrt[3]{\sqrt{64.a^{12}}} = 2a^2$
8. $\left(\sqrt{\sqrt{\sqrt{k}}}\right)^8 = k$
9. $\left(\sqrt[3]{\sqrt[7]{\sqrt{a^2b^3}}}\right)^8 = \sqrt[21]{a^8b^{12}}$
10. $\left(2x^2y\sqrt{3xy}\right)^3 = 24x^7y^4\sqrt{3xy}$
11. $\left(\sqrt[4]{\sqrt[3]{(\sqrt{ab})^5}}\right)^2 = \sqrt[12]{a^5b^5}$
12. $\left(\dfrac{1}{\sqrt[3]{x}}\right)^3 = \dfrac{1}{x}$
13. $\left(\dfrac{\sqrt{3}}{2}\right)^2 = \dfrac{3}{4}$
14. $\left(\dfrac{\sqrt[3]{x^2}}{x}\right)^4 = \dfrac{\sqrt[3]{x^2}}{x^2}$
15. $\left(\dfrac{1}{\sqrt[5]{a^2}}\right)^5 = \dfrac{1}{a^2}$

RADICALES: suma y resta SOLUCIONES

1. $\sqrt{2}+7\sqrt{2}-11\sqrt{2}+\sqrt{2} = -2\sqrt{2}$

2. $7\sqrt[3]{9}+4\sqrt[3]{9}-11\sqrt[3]{9}+\sqrt[3]{9} = \sqrt[3]{9}$

3. $5\sqrt[4]{21}+\sqrt[4]{21}-3\sqrt[4]{21}+14\sqrt[4]{21}-111\sqrt[4]{21} = -94\sqrt[4]{21}$

4. $\sqrt{38}-3\sqrt{38}+5\sqrt{38}+31\sqrt{38} = 34\sqrt{38}$

5. $6\sqrt[5]{8}-3\sqrt[5]{8}+14\sqrt[5]{8}-\sqrt[5]{8} = 16\sqrt[5]{8}$

6. $7\sqrt{2}+5\sqrt{3}-8\sqrt{3}+\sqrt{2}-\sqrt{3} = 8\sqrt{2}-4\sqrt{3}$

7. $11\sqrt{2}+3\sqrt[3]{2}+8\sqrt[3]{2}-\sqrt[3]{2}+4\sqrt{2}-\sqrt{2} = 14\sqrt{2}+10\sqrt[3]{2}$

8. $3\sqrt{7}-\sqrt{11}+3\sqrt{7}-4\sqrt{7}+5\sqrt{11} = 2\sqrt{7}+4\sqrt{11}$

9. $\sqrt{3}+\sqrt[3]{7}-\frac{3\sqrt{3}}{4}+\frac{7}{2}\sqrt{3}-\frac{11}{2}\sqrt[3]{7}+3\sqrt[3]{3} = \frac{15}{4}\sqrt{3}-\frac{9}{2}\sqrt[3]{7}+3\sqrt[3]{3}$

10. $2\sqrt{5}-8\sqrt{5}+32\sqrt{5} = 26\sqrt{5}$

RADICALES: suma y resta SOLUCIONES

1. $\sqrt{18}+\sqrt{50}-\sqrt{2}-\sqrt{8} = 5\sqrt{2}$

2. $\sqrt{50a}-\sqrt{18a} = 2\sqrt{2a}$

3. $\sqrt{180}-2\sqrt{5}+\sqrt{20} = 6\sqrt{5}$

4. $\sqrt{27}-\sqrt{50}+\sqrt{12}+\sqrt{8} = 5\sqrt{3}-3\sqrt{2}$

5. $7\sqrt{150}-3\sqrt{18}+\sqrt{24}-5\sqrt{8}-\sqrt{6} = 36\sqrt{6}-19\sqrt{2}$

6. $\sqrt{18}-3\sqrt{8}+3\sqrt{50}+\sqrt{27}+\sqrt{12} = 12\sqrt{2}+5\sqrt{3}$

7. $\sqrt[3]{5}-\sqrt[3]{250}+\sqrt[3]{16} = \sqrt[3]{5}-3\sqrt[3]{2}$

8. $2\sqrt{8}+4\sqrt{72}-7\sqrt{18} = 7\sqrt{2}$

9. $\sqrt[3]{3x^3}+\sqrt[3]{24y^3}+\sqrt[3]{81z^6} = (x+2y+3z^2)\sqrt[3]{3}$

10. $5\sqrt{6}+\sqrt{600}-2\sqrt{54} = 9\sqrt{6}$

11. $\sqrt[4]{32}-\sqrt[4]{162} = -\sqrt[4]{2}$

12. $\sqrt{8}-\sqrt{18} = -\sqrt{2}$

13. $\sqrt{63}-2\sqrt{7} = \sqrt{7}$

14. $5+7\sqrt{25}-10\sqrt{625} = -210$

15. $\frac{\sqrt{32}}{\sqrt{16}}-\sqrt[4]{324} = -2\sqrt{2}$

16. $\sqrt{a^3}-2a\sqrt[4]{a^6}-\sqrt[8]{a^{12}} = -2a^2\sqrt{a}$

17. $\sqrt[6]{8}+\sqrt{50}-\frac{1}{2}\sqrt{2} = \frac{11}{2}\sqrt{2}$

18. $5-2\sqrt{3}-(6-3\sqrt{3})+\frac{3}{5}\sqrt{3} = -1+\frac{8}{5}\sqrt{3}$