

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. $\sqrt{-25} = \cancel{5}$ porque el cuadrado de cualquier número es positivo
4. $\sqrt{-36} = \cancel{6}$ 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. $\sqrt{-1} = \cancel{1}$
33. $\sqrt{-625} = \cancel{25}$
34. $\sqrt[4]{625} = 5$
35. $\sqrt[4]{-16} = \cancel{2}$
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. $\sqrt[4]{16a^5b^7} = 2ab^4\sqrt[4]{ab^3}$
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. $\sqrt[3]{a^5b^4} = ab^3\sqrt[3]{a^2b}$
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. $\sqrt[3]{27x^2y^3z^4k^5} = 3yzk^3\sqrt[3]{x^2zk^2}$
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. $b^3\sqrt{a} = \sqrt[3]{b^3a}$ 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. $\sqrt{15} \cdot \sqrt{30} = 15\sqrt{2}$
2. $\sqrt[3]{4} \cdot \sqrt[3]{54} = 6$
3. $\sqrt{3} \cdot \sqrt{12} = 6$
4. $\sqrt[3]{9} \cdot \sqrt[3]{15} = 3\sqrt[3]{5}$
5. $\sqrt[5]{a^3} \cdot \sqrt[5]{b^2} = \sqrt[5]{a^3b^2}$
6. $\sqrt[3]{-3y^2} \cdot \sqrt[3]{36} = -3\sqrt[3]{4y^2}$
7. $\sqrt[3]{8x^3} \cdot \sqrt[3]{2x^2y^2} = 2x\sqrt[3]{2x^2y^2}$
8. $\sqrt{3} \cdot \sqrt{3} = 3$
9. $\sqrt[3]{a^2} \cdot \sqrt[3]{a^4} = a^2$
10. $\sqrt[6]{2^5} \cdot \sqrt[6]{2} = 2$
11. $\sqrt[5]{2} \cdot \sqrt[5]{-16} = -2$
12. $\sqrt[4]{a^2b} \cdot \sqrt[4]{a^5b^3} = ab\sqrt[4]{a^3}$
13. $\sqrt{3} \cdot \sqrt{2} \cdot \sqrt{8} = 4\sqrt{3}$
14. $\sqrt[3]{6} \cdot \sqrt[3]{4} \cdot \sqrt[3]{12} = 2\sqrt[3]{36}$
15. $\sqrt[3]{a^2} \cdot \sqrt[3]{a} = a$
16. $\frac{\sqrt{625a^2}}{\sqrt{25}} = 5a$
17. $\frac{\sqrt{32}}{\sqrt{50}} = \frac{4}{5}$
18. $\frac{5\sqrt{9a^3b}}{3\sqrt{25a}} = a\sqrt{b}$
19. $\frac{\sqrt[4]{324a^7}}{\sqrt[4]{256a}} = \frac{3a}{2}\sqrt{\frac{a}{2}}$
20. $\frac{\sqrt[10]{a^2b}}{\sqrt[10]{a^3b^5}} = \sqrt[10]{\frac{1}{ab^4}}$
21. $\frac{\sqrt{2}}{\sqrt{50}} = \frac{1}{5}$
22. $\frac{\sqrt{x^3y^4}}{\sqrt{x^2y^2}} = y\sqrt{x}$
23. $\frac{\sqrt[3]{5^3 \cdot 7}}{\sqrt[3]{7^5}} = \frac{5}{7}\sqrt[3]{\frac{1}{7}} = \frac{5}{7\sqrt[3]{7}}$
24. $\sqrt{\frac{12}{7}} \cdot \sqrt{\frac{21}{9}} = 2$
25. $\sqrt{\frac{2}{5}} \cdot \sqrt{\frac{15}{16}} = \frac{1}{2}\sqrt{\frac{3}{2}} = \frac{\sqrt{3}}{2\sqrt{2}} = \frac{\sqrt{6}}{4}$
26. $\sqrt[3]{a^2b^2} \cdot \sqrt[3]{a^4bc^4} = a^2bc\sqrt[3]{c}$
27. $\sqrt[4]{a^2bc} \cdot \sqrt[4]{a^4b^9c^3} = ab^2c\sqrt{ab}$
28. $\sqrt{5x^2} \cdot \sqrt{35x} = 5x\sqrt{7x}$
29. $\sqrt{b^5} \cdot \sqrt{bx^3a^7} = b^3xa^3\sqrt{xa}$
30. $\sqrt{\frac{1}{7x^3y^2}} \cdot \sqrt{14x^5y^7} = xy^2\sqrt{2y}$
31. $\frac{\sqrt{x^2}\sqrt{x^2y}\sqrt{y^3}}{\sqrt{x^2y^3}\sqrt{xy}} = \sqrt{x}$
32. $\frac{\sqrt{6x}\sqrt{10x^3y}}{\sqrt{3x^5y}\sqrt{25xy^4}} = \frac{2}{xy^2}\sqrt{\frac{1}{5}} = \frac{2}{xy^2\sqrt{5}}$
33. $\frac{\sqrt{2x^4}}{\sqrt{75y^5}} \sqrt{\frac{10x^5}{3y}} = \frac{2x^4}{3y^3}\sqrt{\frac{x}{5}} = \frac{2x^4\sqrt{5x}}{15y^3}$

RADICALES: potencia y raíz **SOLUCIONES**

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

RADICALES: suma y resta SOLUCIONES

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

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

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

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

3. $5\sqrt[4]{21} + \sqrt[4]{21} - 3\sqrt[4]{21} + 14\sqrt[4]{21} - 11\sqrt[4]{21} = -94\sqrt[4]{21}$

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

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

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

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

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