无理式（1）

根式无理式

1. $\sqrt{x^2} - \sqrt{(x+1)^2}, -1 < x < 0$
2. $\sqrt[4]{(m-2)^4} + \sqrt[6]{(m-3)^6}, 2 \le m$
3. $a + \sqrt[6]{(a-1)^6}$
   a. $a \ge 1$
   b. $a < 1$
4. $\sqrt[4]{(m+1)^4} - \sqrt{(m-1)^2}, m < -1$

简化根式

1. $\sqrt[6]{16x^4}$
2. $\sqrt[9]{-27x^3y^6z^9}$
3. $(3\sqrt[3]{x^4y^3})^2$
4. $\sqrt[3]{\dfrac{24x^2y^3}{z^2}}$

5. $\sqrt[3]{xy^2} \cdot \sqrt[3]{x^2yz}$
6. $\dfrac{\sqrt[3]{162x^2}}{\sqrt[3]{6x}}$
7. $\sqrt[5]{\sqrt[3]{32x^{15}y^5}}$
8. $-6\sqrt[4]{324x^7yz^7}$

9. $-6\sqrt[4]{405a^5b^8c}$
10. $-6\sqrt[4]{80m^4p^7q^4}$
11. $3\sqrt[3]{135xy^3}$
12. $8\sqrt[3]{-750xy}$

同类根式

1. $\sqrt[12]{x^8y^4}$
2. $\sqrt[3]{\sqrt{2^3}}$
3. $\sqrt[3]{\sqrt[4]{27x^3y^6z^2}}$
4. $\sqrt[3]{\dfrac{24x^3y^3}{z^2}}$

5. $\dfrac{\sqrt[3]{162x^2}}{\sqrt[3]{6x}}$
6. $\sqrt[6]{256x^2y^4z^8}$
7. $\sqrt[3]{\sqrt{2\sqrt{7}}}$
8. $\sqrt[n]{a^{2n+1}b}$

9. $\sqrt[4]{\dfrac{y^5}{x^5}}$
10. $\sqrt[3]{\dfrac{(x+1)^5}{x-1}}$
11. $\sqrt{\dfrac{b^4}{54a^7}}$
12. $\sqrt[3]{\dfrac{ax^3}{27m^2n^3}}$

根式加减

1. $2\sqrt{27a^3b} - a\sqrt{48ab} - a\sqrt{144a^3b}$
2. $5n\sqrt{27mn^2} + 2\sqrt{12mn^4} - n\sqrt{3mn^2}$
3. $\sqrt{12m^4n} - m\sqrt{75m^2n} + 2\sqrt{27m^4n}$

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4. $\sqrt{72x^2y^2} - \sqrt{18x^2y} - \left(\sqrt{50x^2y^2} + x\sqrt{2y}\right)$

5. $\left(\sqrt{9x^2y} - \sqrt{16y}\right) - \left(\sqrt{49x^2y} - 4\sqrt{y}\right)$

6. $\sqrt{32x^2y^2} + \sqrt{12x^2y} - \sqrt{18x^2y^2} - \sqrt{27x^2y}$

7. $\sqrt{4x^2y} - \sqrt{9xy^2} - \sqrt{16x^2y} + \sqrt{y^2x}$

8. $4\sqrt{18n^2m} - 2n\sqrt{8m} + n\sqrt{2m}$

9. $2\sqrt{9m^2n} - 5m\sqrt{9n} + \sqrt{m^2n}$

10. $2\sqrt{98a^4b} - 2a\sqrt{162a^2b} + a\sqrt{200b}$

11. $2a\sqrt{27a} - \frac{b}{6}\sqrt{54a^4} + 6a\sqrt{\frac{3a}{4}} + 2ab\sqrt[3]{\frac{a}{8}} + 2\sqrt{3a^3}$

12. $\frac{2}{3}x\sqrt{9x} + 6x\sqrt[3]{\frac{y}{x}} + \sqrt[3]{\frac{1}{xyz}} - x^2\sqrt{\frac{1}{x}}$

13. $\sqrt[3]{27x^4y} - \sqrt[3]{8xy^3} + x\sqrt[3]{64xy} - y\sqrt[3]{x}$

分数指数

1. $\sqrt{x\sqrt{x^3\sqrt{x^6}}}$

2. $\frac{\sqrt[5]{4} \times \sqrt{8} \times \left(\sqrt[3]{\sqrt[5]{4}}\right)^2}{\sqrt[3]{\sqrt{2}}}$

3. $2 \times \sqrt{2} \times \sqrt[4]{2} \times \sqrt[8]{2}$

4. $\sqrt[4]{a} \times \sqrt[8]{a} \times \sqrt[8]{a^5}$

5. $\sqrt{a^{-1} \times \sqrt[4]{a^3}}$

6. $\frac{\sqrt{x} \times \sqrt[3]{x^2}}{x \times \sqrt[6]{x}}$

7. $\frac{\sqrt{a^2} \times \sqrt[5]{a^3}}{\sqrt{a} \times \sqrt[10]{a^7}}$

8. $\frac{\sqrt[3]{a^2} \times a\sqrt{a}}{\sqrt[6]{a^5} \times \sqrt[4]{a^3}}$

9. $\left(\frac{\sqrt{x}}{\sqrt[3]{y^2}} \times \frac{\sqrt{xy}}{\sqrt{\sqrt{x}}}\right)^6$

10. $\sqrt[5]{a \times \sqrt[3]{a^2}} \times \sqrt[6]{\sqrt[4]{a^9}} \times \sqrt[3]{a^2} \times \sqrt[8]{a^7}$

有理化

1. $\frac{a\sqrt{x} + b\sqrt{y}}{a\sqrt{x} - b\sqrt{y}}$

2. $\frac{2}{1 - \sqrt{2} + \sqrt{3}}$

3. $\frac{\left(2\sqrt[3]{7} - 4\sqrt[3]{2}\right)}{\sqrt[3]{3}}$

4. $\frac{\sqrt[3]{x^2} + \sqrt[3]{xy} + \sqrt[3]{y^2}}{\sqrt[3]{x^2} - \sqrt[3]{xy} + \sqrt[3]{y^2}}$

5. $\frac{\sqrt{3}}{4 - 3\sqrt{5}}$

6. $\frac{\sqrt[3]{2}}{\sqrt[3]{2} - 1}$

7. $\frac{\sqrt[3]{a} - \sqrt[3]{2b}}{\sqrt[3]{a^2} - \sqrt[3]{2ab}\sqrt[3]{4b^2}}$

8. $\frac{\sqrt{x} - 4}{\sqrt[4]{x} - 2}$