

EJERCICIOS DE RADICALES

1 Halla las sumas:

$$2\sqrt{12} - 3\sqrt{75} + \sqrt{27} =$$

$$\sqrt{24} - 5\sqrt{6} + \sqrt{486} =$$

$$2\sqrt{5} + \sqrt{45} + \sqrt{180} - \sqrt{80} =$$

$$\sqrt[3]{54} - \sqrt[3]{16} + \sqrt[3]{250} =$$

2 Realiza las operaciones:

$$(\sqrt{7} - \sqrt{2})^2 =$$

$$(2 - \sqrt{3})^5 =$$

$$(\sqrt{5} + 2) \cdot (\sqrt{5} - 2) =$$

$$(2\sqrt{5} + 3\sqrt{2}) \cdot (2\sqrt{5} - 3\sqrt{2}) =$$

3 Opera:

$$\frac{\sqrt[3]{2}}{\sqrt[4]{\frac{1}{8}}} =$$

4 Efectúa:

$$\sqrt{\sqrt[3]{\sqrt[3]{2\sqrt{2}}}} =$$

5 Calcula:

$$\frac{1}{2 - \sqrt{3}} \cdot \frac{1}{2 + \sqrt{3}} =$$

$$\sqrt{\frac{a-b}{(a-b)^2} \cdot \frac{a+b}{a^2-b^2}} =$$

6 Racionalizar

$$\frac{5}{2\sqrt{2}} =$$

$$\frac{1}{\sqrt[3]{3}} =$$

$$\frac{2}{3+\sqrt{3}} =$$

$$\frac{\sqrt{2}}{\sqrt{3}-\sqrt{2}} =$$

SOLUCIONES

1 Halla las sumas:

$$2\sqrt{12} - 3\sqrt{75} + \sqrt{27} =$$

$$2\sqrt{2^2 \cdot 3} - 3\sqrt{3 \cdot 5^2} + \sqrt{3^3} = 4\sqrt{3} - 15\sqrt{3} + 3\sqrt{3} = -8\sqrt{3}$$

$$\sqrt{24} - 5\sqrt{6} + \sqrt{486} =$$

$$= \sqrt{2^3 \cdot 3} - 5\sqrt{6} + \sqrt{2 \cdot 3^5} =$$

$$= 2\sqrt{6} - 5\sqrt{6} + 9\sqrt{6} = 6\sqrt{6}$$

$$2\sqrt{5} + \sqrt{45} + \sqrt{180} - \sqrt{80} =$$

$$= 2\sqrt{5} + \sqrt{3^2 \cdot 5} + \sqrt{2^2 \cdot 3^2 \cdot 5} - \sqrt{2^4 \cdot 5} =$$

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

$$\sqrt[3]{54} - \sqrt[3]{16} + \sqrt[3]{250} =$$

$$= \sqrt[3]{2 \cdot 3^3} - \sqrt[3]{2^4} + \sqrt[3]{2 \cdot 5^3} =$$

$$= 3\sqrt[3]{2} - 2\sqrt[3]{2} + 5\sqrt[3]{2} = 6\sqrt[3]{2}$$

2 Realiza las operaciones:

$$(\sqrt{7} - \sqrt{2})^2 =$$

$$= (\sqrt{7})^2 - 2 \cdot \sqrt{7} \cdot \sqrt{2} + (\sqrt{2})^2 =$$

$$= 7 - 2\sqrt{14} + 2 = 9 - 2\sqrt{14}$$

$$(2 - \sqrt{3})^2 =$$

$$= 2^2 - 2 \cdot 2 \cdot \sqrt{3} + (\sqrt{3})^2 =$$

$$= 4 - 4\sqrt{3} + 3 = 7 - 4\sqrt{3}$$

$$(\sqrt{5} + 2) \cdot (\sqrt{5} - 2) =$$

$$= (\sqrt{5})^2 - 2^2 = 5 - 4 = 1$$

$$(2\sqrt{5} + 3\sqrt{2}) \cdot (2\sqrt{5} - 3\sqrt{2}) =$$

$$= (2\sqrt{5})^2 - (3\sqrt{2})^2 =$$

$$= 2^2 \cdot (\sqrt{5})^2 - 3^2 (\sqrt{2})^2 =$$

$$= 4 \cdot 5 - 9 \cdot 2 = 20 - 18 = 2$$

3 Opera:

$$\sqrt[4]{\frac{\sqrt[3]{2}}{\sqrt[4]{8}}}$$

$$\sqrt[4]{\frac{\sqrt[3]{2}}{\sqrt[4]{8}}} = \sqrt[4]{\frac{\sqrt[3]{2}}{\sqrt{2^{-3}}}} = \sqrt[4]{\sqrt[4]{\frac{2^2}{(2^{-3})^3}}} = \sqrt[4]{\sqrt[4]{\frac{2^2}{2^{-9}}}} = \sqrt[4]{\sqrt[4]{2^{11}}} = \sqrt[4]{2^{11}}$$

4 Efectúa:

$$\sqrt[3]{\sqrt[3]{\sqrt[3]{2\sqrt{2}}}}$$

$$\sqrt[3]{\sqrt[3]{\sqrt[3]{2\sqrt{2}}}} = \sqrt[3]{\sqrt[3]{\sqrt[3]{2 \cdot 2^{\frac{1}{2}}}}} = \sqrt[3]{\sqrt[3]{\sqrt[3]{2^{\frac{5}{2}}}}} = \sqrt[3]{2^{\frac{5}{2}}} = \sqrt[3]{2^{\frac{5}{2}}}$$

5 Calcula:

$$\frac{1}{2 - \sqrt{3}} \cdot \frac{1}{2 + \sqrt{3}} =$$

$$= \frac{1}{2^2 - (\sqrt{3})^2} = \frac{1}{4 - 3} = 1$$

$$\sqrt{\frac{a-b}{(a-b)^2} \cdot \frac{a+b}{a^2-b^2}} =$$

$$= \sqrt{\frac{a^2-b^2}{(a-b)^2 \cdot (a^2-b^2)}} =$$

6 Racionalizar

$$\frac{5}{2\sqrt{2}} =$$

$$= \frac{5 \cdot \sqrt{2}}{2 \cdot \sqrt{2} \cdot \sqrt{2}} = \frac{5 \cdot \sqrt{2}}{2 \cdot \sqrt{2}^2} = \frac{5 \cdot \sqrt{2}}{2 \cdot 2} = \frac{5 \cdot \sqrt{2}}{4}$$

$$\frac{1}{\sqrt[3]{3}} =$$

$$\frac{1}{\sqrt[3]{3}} = \frac{\sqrt[3]{3^2}}{\sqrt[3]{3} \cdot \sqrt[3]{3^2}} = \frac{\sqrt[3]{3^2}}{\sqrt[3]{3^3}} = \frac{\sqrt[3]{9}}{3}$$

$$\frac{2}{3 + \sqrt{3}} =$$

$$\frac{2}{3 + \sqrt{3}} = \frac{2 \cdot (3 - \sqrt{3})}{(3 + \sqrt{3}) \cdot (3 - \sqrt{3})} = \frac{6 - 2\sqrt{3}}{3^2 - (\sqrt{3})^2} =$$

$$\frac{6 - 2\sqrt{3}}{9 - 3} = \frac{6 - 2\sqrt{3}}{6} = \frac{3 - \sqrt{3}}{3}$$

$$\frac{\sqrt{2}}{\sqrt{3} - \sqrt{2}} =$$

$$= \frac{\sqrt{2} \cdot (\sqrt{3} + \sqrt{2})}{(\sqrt{3} - \sqrt{2}) \cdot (\sqrt{3} + \sqrt{2})} =$$

$$= \frac{\sqrt{6} + \sqrt{2}^2}{(\sqrt{3})^2 - (\sqrt{2})^2} = \frac{2 + \sqrt{6}}{3 - 2} = 2 + \sqrt{6}$$