

1.- Opera y simplifica:

$$\frac{\sqrt[6]{ab} \cdot \sqrt[3]{a^2b^4} \cdot \sqrt{b^5}}{\sqrt[4]{a^2b^3}} \quad \frac{\sqrt[6]{\frac{ab}{c}} \cdot \sqrt{\frac{c^2}{b}} \cdot \sqrt[4]{\frac{c^3}{ab}}}{\sqrt[4]{\frac{ab}{c}} \cdot \sqrt{\frac{b^2c}{b}} \cdot \sqrt[4]{\frac{c^2}{ab^2}}} \quad \frac{\sqrt{3a^2b}}{\sqrt[3]{abc} \cdot \sqrt[6]{3bc}} \quad \sqrt{3a^2b} \cdot \sqrt[6]{2ac} \cdot \sqrt[3]{3ac^2}$$

2.- Racionaliza:

$$\frac{2\sqrt{6}}{\sqrt{2}} \quad \frac{3\sqrt{2}}{\sqrt{6}} \quad \frac{3}{\sqrt[3]{2^2}} \quad \frac{\sqrt{5}}{2\sqrt[3]{6}} \quad \frac{3}{\sqrt[5]{2^3}} \quad \frac{1}{\sqrt{2} + \sqrt{3}} \quad \frac{2\sqrt{3}}{2 - \sqrt{3}}$$

$$\frac{\sqrt{3}}{\sqrt{3} - \sqrt{2}} \quad \frac{1 + \sqrt{2}}{1 - \sqrt{2}} \quad \frac{\sqrt{a} + \sqrt{b}}{\sqrt{a} - \sqrt{b}} \quad \frac{\sqrt{a+b}}{\sqrt{a+b} - \sqrt{a-b}} \quad \frac{3\sqrt{2} + \sqrt{3}}{\sqrt{2} - \sqrt{3}}$$

3.- Realiza las siguientes sumas de radicales:

$$\sqrt{6} - 2\sqrt{24} + 3\sqrt{54} - 5\sqrt{12} + \sqrt{27} \quad -3\sqrt{45} - 3\sqrt{125} + 2\sqrt{500} - 5\sqrt{20}$$

$$\sqrt{15} - 2\sqrt{375} + 3\sqrt{60} - 5\sqrt{8} + \sqrt{72} \quad \sqrt{45} - \sqrt{20} + \sqrt{80} - \sqrt{5}$$

$$\sqrt{75} - \sqrt{8} + 3\sqrt{12} - 2\sqrt{32} \quad 2\sqrt[4]{003} - \frac{1}{6}\sqrt{75} + \frac{1}{5}\sqrt{\frac{27}{4}}$$

$$2\sqrt[3]{a^6b} - 3a^2\sqrt[3]{64b} + 5a^3\sqrt[3]{a^3b} + a^2\sqrt[3]{125b}$$

4.- Opera y simplifica estas expresiones:

$$\frac{3\sqrt{3} - 2\sqrt{6}}{3\sqrt{3} + 2\sqrt{6}} - \frac{2\sqrt{2}}{6 - \sqrt{18}} + \frac{76}{3\sqrt{2}} - \frac{49}{3} \quad (\sqrt{45} + 3\sqrt{20} - \sqrt{18} + 2\sqrt{50}) \cdot \sqrt{2}$$

$$(8\sqrt{12} + 3\sqrt{8} - 3\sqrt{75} + 2\sqrt{18}) \cdot (\sqrt{2} - 8\sqrt{3})$$

$$\sqrt[6]{81(7 + 2\sqrt{10})} \sqrt[3]{\sqrt{5} - \sqrt{2}} - \sqrt[4]{10 + 2\sqrt{21}} \sqrt{\sqrt{7} - \sqrt{3}} + \sqrt[4]{6 + 2\sqrt{5}} \sqrt{\sqrt{5} - 1}$$

$$\sqrt[3]{x + \sqrt{x^2 - y^3}} \quad \sqrt[3]{x - \sqrt{x^2 - y^3}}$$

5. Calcula el valor de estas expresiones:

$$a) \frac{2}{\sqrt{5} - \sqrt{3}} - \frac{2}{\sqrt{3} - 1} - \frac{4}{\sqrt{5} - 1} =$$

$$b) \frac{3}{\sqrt{6} + \sqrt{3}} + \frac{2}{\sqrt{3} + 1} - \frac{5}{\sqrt{6} + 1}$$

$$c) \frac{5}{\sqrt{7} - \sqrt{2}} - \frac{1}{\sqrt{2} + 1} - \frac{6}{\sqrt{7} + 1} =$$

$$d) \frac{2}{\sqrt{7} - \sqrt{5}} - \frac{3}{\sqrt{7} - 2} - \frac{1}{\sqrt{5} - 2}$$

6. Efectúa las siguientes operaciones:

$$\bullet \frac{(2\sqrt{48} + 3\sqrt{75} - 2\sqrt{27}) \cdot 8\sqrt{2}}{2\sqrt{96}} =$$

$$\bullet \frac{(3\sqrt{24} + 2\sqrt{150}) \cdot 2\sqrt{3}}{48\sqrt{2}} =$$

$$\bullet \sqrt{\frac{\sqrt[3]{0.6^{-3}} \cdot \left(\frac{1}{2}\right)^{-2}}{0,16}} : \frac{1}{\sqrt[3]{8^{-2}}} =$$

$$\bullet \frac{(3\sqrt{80} + 5\sqrt{180}) \cdot 2\sqrt{3}}{\sqrt{735}} =$$

$$\bullet \frac{(3\sqrt{6} - \sqrt{24} + 2\sqrt{54}) \cdot 8\sqrt{3}}{\sqrt{288}} =$$

$$\bullet \sqrt{\frac{\sqrt[3]{\left(\frac{1}{27}\right)^{-2}} \cdot \sqrt[3]{\left(\frac{1}{64}\right)^{-2}}}{0,25}} =$$

$$\bullet \frac{(2\sqrt{24} - \sqrt{48}) (\sqrt{6} + \sqrt{3})}{\frac{7\sqrt{3} \cdot 4\sqrt{12}}{14}} =$$

$$\bullet \frac{(2\sqrt{54} - 6\sqrt{3}) (\sqrt{6} + \sqrt{3})}{\frac{2\sqrt{3} \cdot \sqrt{75}}{5}} =$$

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

$$\bullet \frac{(2\sqrt{5} + 3\sqrt{10}) (\sqrt{10} - \sqrt{5})}{4 - \sqrt{2}} =$$

$$\bullet \frac{(4\sqrt{6} + 2\sqrt{3}) (3\sqrt{6} - 2\sqrt{3})}{2(10 - \sqrt{2})} =$$

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

$$\bullet \sqrt{2} (\sqrt{32} - \sqrt{50} + \sqrt{18})$$

$$\bullet \sqrt{3} (\sqrt{108} - \sqrt{27} + \sqrt{48})$$

$$\bullet (\sqrt{5} - \sqrt{3}) (6\sqrt{5} + 6\sqrt{3})$$

$$\bullet (6\sqrt{6} - 6\sqrt{3}) (\sqrt{6} + \sqrt{3})$$

$$\bullet (4\sqrt{6} - 4\sqrt{3}) (\sqrt{6} + \sqrt{3})$$

$$\bullet (\sqrt{180} + \sqrt{162}) (\sqrt{20} - \sqrt{18})$$

$$\bullet 8 \left(\sqrt{\frac{25}{2}} + \sqrt{\frac{9}{8}} \right) \left(\sqrt{32} - 3\sqrt{\frac{1}{2}} \right)$$

$$\bullet 2\sqrt[3]{16} + 3\sqrt[3]{54} - \sqrt[3]{128} + \sqrt[3]{250}$$

$$\bullet 2\sqrt[4]{4375} - \sqrt[4]{9072} - 3\sqrt[4]{567} + \sqrt[4]{112}$$

$$\bullet 5\sqrt[4]{176} - 3\sqrt[4]{891} + 6\sqrt[4]{6875} - 2\sqrt[4]{14256}$$

$$\bullet 2\sqrt[3]{1029} - 5\sqrt[3]{192} + 3\sqrt[3]{648}$$

$$\bullet \frac{[(4\sqrt{50} - 3\sqrt{72}) (5\sqrt{2} + \sqrt{18})] \cdot \sqrt{2}}{\sqrt{32} - \sqrt{8}} =$$

$$\bullet \frac{\left(2\sqrt{45} + \frac{3}{2}\sqrt{72}\right) \cdot (2\sqrt{5} - 3\sqrt{2}) \cdot 10\sqrt{5}}{2\sqrt{180}} =$$

$$\bullet \frac{(2\sqrt{54} - 6\sqrt{3}) \cdot (\sqrt{6} + \sqrt{3})}{\sqrt{1 + \sqrt{5 + \sqrt{10 + \sqrt{36}}}}} =$$

$$\bullet \frac{\left(9\sqrt{3} + 5\sqrt{\frac{27}{4}}\right) \cdot 20\sqrt{\frac{1}{3}}}{33} =$$

$$\bullet \left(\frac{2\sqrt{6} + \sqrt{3}}{2\sqrt{6} - \sqrt{3}} - \frac{2\sqrt{6} - \sqrt{3}}{2\sqrt{6} + \sqrt{3}}\right) \cdot 14\sqrt{2} =$$

$$\bullet \frac{\left(5\sqrt{\frac{1}{2}} + 3\sqrt{\frac{1}{8}}\right) \cdot \left(4\sqrt{2} - 3\sqrt{\frac{1}{2}}\right)}{\frac{1}{8}} =$$

$$\bullet \frac{(3\sqrt{6} + 5\sqrt{3})(3\sqrt{54} - 3\sqrt{27})}{1 + 2\sqrt{2}} =$$

$$\bullet \frac{(3\sqrt{20} + 2\sqrt{27})(\sqrt{5} - \sqrt{3})}{\frac{1}{4}\sqrt{6} \times \frac{2}{5}\sqrt{150}} =$$

$$\bullet \frac{6\sqrt{18} - 3\sqrt{72} + 9\sqrt{98}}{\sqrt{\frac{9}{2}}} =$$

$$\bullet \frac{2\sqrt{128} - 3\sqrt{32} + 5\sqrt{50} - 2\sqrt{2}}{\sqrt{\frac{81}{2}}} =$$

$$\bullet \frac{4\sqrt{80} - \sqrt{20} + 5\sqrt{125} - 5\sqrt{5}}{17\sqrt{\frac{1}{5}}} =$$

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

$$\bullet \left(\frac{\sqrt{6} + 1}{\sqrt{6} - 1} - \frac{\sqrt{6} - 1}{\sqrt{6} + 1}\right) \cdot \frac{5\sqrt{24}}{8} =$$

$$\bullet \left(\frac{\sqrt{3} + 1}{\sqrt{3} - 1} - \frac{\sqrt{3} - 1}{\sqrt{3} + 1}\right)^2 : 6 =$$

$$\bullet \frac{(2\sqrt{2} + 5\sqrt{3})^2 - (5\sqrt{3} - 2\sqrt{2})^2}{2\sqrt{24}} =$$

$$\bullet \frac{(2\sqrt{150} + 2\sqrt{8})(5\sqrt{6} - 2\sqrt{2}) \cdot \sqrt{2}}{\sqrt{10082}} =$$

$$\bullet \frac{9\sqrt{72} - 3\sqrt{18} + 12\sqrt{98}}{\sqrt{\frac{9}{2}}} =$$

$$\bullet \frac{2\sqrt{72} - 3\sqrt{50} + 4\sqrt{32} + 2\sqrt{98}}{\frac{54}{25}\sqrt{\frac{25}{2}}} =$$

$$\bullet \frac{9\sqrt{12} + 15\sqrt{48} + 6\sqrt{75} + 2\sqrt{3}}{\sqrt{\frac{121}{3}}} =$$

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