

1. Risolvi:

$$\sqrt[5]{(-13)^5} = -13$$

$$\sqrt[6]{(x-1)^2} = \sqrt[3]{|x-1|}$$

$$\sqrt[4]{x^2 + 2x + 1} = \sqrt{|x+1|}$$

$$\sqrt[9]{8} = \sqrt[9]{2^3} = \sqrt[3]{2}$$

$$\sqrt[6]{0,008} = \sqrt[6]{(0,2)^3} = \sqrt{0,2}$$

$$\sqrt[12]{15^4 \cdot \left(\frac{1}{5}\right)^8} = \sqrt[12]{5^4 \cdot 3^4 \cdot \frac{1}{5^8}} = \sqrt[12]{\frac{3^4}{5^4}} = \sqrt[12]{\left(\frac{3}{5}\right)^4} = \sqrt[3]{\frac{3}{5}}$$

$$\sqrt[9]{\left(\frac{4}{5}\right)^3 : \left(\frac{2}{5}\right)^6} = \sqrt[9]{\frac{2^6 \cdot 5^6}{5^3 \cdot 2^6}} = \sqrt[9]{5^3} = \sqrt[3]{5}$$

$$\sqrt[10]{\left(\frac{27}{4}\right)^5 : \left(\frac{3}{2}\right)^{10}} = \sqrt[10]{\frac{3^{15} \cdot 2^{10}}{2^{10} \cdot 3^{10}}} = \sqrt[10]{3^5} = \sqrt{3}$$

$$\sqrt[6]{\frac{36}{25}} = \sqrt[6]{\left(\frac{6}{5}\right)^2} = \sqrt[3]{\frac{6}{5}}$$

$$\sqrt[12]{100^3} = \sqrt[12]{10^6} = \sqrt{10}$$

$$\sqrt[8]{(1-\sqrt{2})^8} = \sqrt{2} - 1$$

$$\sqrt[6]{(x+3)^3} = \sqrt{x+3} \text{ c.e.: } x \geq -3$$

Calcola il valore delle seguenti espressioni:

$$2. \quad 3\sqrt{3}(\sqrt{3} + 2) - \sqrt{3}(1 + 3\sqrt{3}) = 9 + 6\sqrt{3} - \sqrt{3} - 9 = 5\sqrt{3}$$

$$3. \quad (\sqrt[5]{-2})^5 + (\sqrt{2} - \sqrt{7})(\sqrt{2} + \sqrt{7}) + (2\sqrt{2} - 3)^2 - (\sqrt[4]{2})^4 = -2 + 2 - 7 + 8 + 9 - 12\sqrt{2} - 2 = 8 - 12\sqrt{2}$$

$$4. \quad \left[\sqrt[5]{(1+\sqrt{5})^5} + \sqrt[4]{(\sqrt{5}-4)^4} \right]^2 : [(\sqrt{29}-2)(\sqrt{29}+2)] = (1+\sqrt{5}+4-\sqrt{5})^2 : (29-4) = 5^2 : 25 = 1$$

$$5. \quad [(\sqrt{13}+1)^2 - (3-\sqrt{13})^2 + (\sqrt[6]{2})^{18}] : \sqrt[4]{(-13)^2} = [13+1+2\sqrt{13} - (9+13-6\sqrt{13}) + 2^3] : \sqrt{13} = \frac{8\sqrt{13}}{\sqrt{13}} = 8$$

$$6. \quad (\sqrt{b}+2)(\sqrt{b}-2) + \sqrt{(b+4)^2} = b-4+b+4 = 2b \quad \text{C.E.: } b \geq 0$$

$$7. \quad \sqrt[6]{27} + \sqrt{3} : \sqrt{3} - (1-2\sqrt{3})^2 + (3\sqrt{2}-\sqrt{6})(3\sqrt{2}+\sqrt{6}) = \\ = \sqrt[6]{3^3} + 1 - (1+12-4\sqrt{3}) + 18-6 = \sqrt{3} + 4\sqrt{3} = 5\sqrt{3}$$

Disponi in ordine crescente i radicali dei seguenti gruppi:

8. $\sqrt{5}; \sqrt[4]{3}; \sqrt[3]{2^3} = 2$ $\sqrt[4]{5^2}; \sqrt[4]{3}; \sqrt[4]{2^4}$ $\sqrt[4]{3} < \sqrt[3]{8} < \sqrt{5}$

9. $\sqrt{2}; \sqrt[6]{8} = \sqrt{2}; \sqrt[8]{8}$ $\sqrt[8]{2^4}; \sqrt[8]{2^4}; \sqrt[8]{2^3}$ $\sqrt[8]{8} < \sqrt{2} = \sqrt[6]{8}$