

h) SOMMA ALGEBRICA - SVOLGIMENTI

$$16) \frac{5\sqrt[3]{192} + 4\sqrt[3]{81}}{\sqrt[4]{65536}} = \frac{5\sqrt[3]{2^6 \cdot 3} + 4\sqrt[3]{3^4}}{\sqrt[4]{2^{16}}} = \frac{5 \cdot 2^2 \sqrt[3]{3} + 4 \cdot 3\sqrt[3]{3}}{2^4} = \frac{20\sqrt[3]{3} + 12\sqrt[3]{3}}{16} = \frac{32\sqrt[3]{3}}{16} = \boxed{2\sqrt[3]{3}}$$

17)

$$\begin{aligned} \sqrt{(a-b)^3} + \sqrt{ab^2 - b^3} &= (a-b)\sqrt{a-b} + \sqrt{b^2(a-b)} = \\ &= (a-b)\sqrt{a-b} + b\sqrt{a-b} = (\cancel{a} - \cancel{b} + b)\sqrt{a-b} = \boxed{a\sqrt{a-b}} \end{aligned}$$

Il passaggio nel quale a partire da più radicali simili sommati algebricamente se ne fa uno solo, può essere pensato come il RACCOGLIMENTO del radicale fra i termini che lo contengono.

18)

$$\frac{2}{5}\sqrt{9a} + \sqrt{4b^3} - (\sqrt{a} + \sqrt{b}) = \frac{6}{5}\sqrt{a} + 2b\sqrt{b} - \sqrt{a} - \sqrt{b} = \left(\frac{6}{5} - 1\right)\sqrt{a} + (2b - 1)\sqrt{b} = \boxed{\frac{1}{5}\sqrt{a} + (2b - 1)\sqrt{b}}$$

$$19) \frac{\sqrt{2048} - \sqrt{512}}{2\sqrt{50} + \sqrt{72}} = \frac{\sqrt{2^{11}} - \sqrt{2^9}}{2\sqrt{5^2 \cdot 2} + \sqrt{6^2 \cdot 2}} = \frac{2^5\sqrt{2} - 2^4\sqrt{2}}{10\sqrt{2} + 6\sqrt{2}} = \frac{32\sqrt{2} - 16\sqrt{2}}{16\sqrt{2}} = \frac{16\sqrt{2}}{16\sqrt{2}} = \boxed{1}$$

$$20) \frac{\sqrt{x^3} - \sqrt{4x}}{x^2 - 4} = \frac{x\sqrt{x} - 2\sqrt{x}}{x^2 - 4} = \frac{\cancel{(x-2)}\sqrt{x}}{(x+2)\cancel{(x-2)}} = \boxed{\frac{\sqrt{x}}{x+2}}$$

21)

$$\begin{aligned} \sqrt{4t+4} + \sqrt{9t+9} + \sqrt[3]{64t+64} &= \sqrt{4(t+1)} + \sqrt{9(t+1)} + \sqrt[3]{64(t+1)} = \\ &= 2\sqrt{t+1} + 3\sqrt{t+1} + 4\sqrt[3]{t+1} = \boxed{5\sqrt{t+1} + 4\sqrt[3]{t+1}} \end{aligned}$$

$$22) \frac{\sqrt[4]{a^9} - \sqrt[4]{16a^5} + \sqrt[4]{a}}{a^3 - 3a^2 + 3a - 1} = \frac{a^2\sqrt[4]{a} - 2a\sqrt[4]{a} + \sqrt[4]{a}}{(a-1)^3} = \frac{(a^2 - 2a + 1)\sqrt[4]{a}}{(a-1)^3} = \frac{\cancel{(a-1)^2}\sqrt[4]{a}}{(a-1)^{\cancel{2}}} = \boxed{\frac{\sqrt[4]{a}}{a-1}}$$

$$23) \sqrt[3]{\frac{81}{8}} + \sqrt[3]{\frac{3}{125}} = \sqrt[3]{\frac{3^4}{2^3}} + \sqrt[3]{\frac{3}{5^3}} = \frac{3}{2}\sqrt[3]{3} + \frac{1}{5}\sqrt[3]{3} = \left(\frac{3}{2} + \frac{1}{5}\right)\sqrt[3]{3} = \frac{15+2}{10}\sqrt[3]{3} = \boxed{\frac{17}{10}\sqrt[3]{3}}$$

24)

$$\begin{aligned} \sqrt{x^3 + x^2 - x - 1} - \sqrt{4x - 4} &= \sqrt{x^2(x+1) - (x+1)} - \sqrt{4(x-1)} = \\ &= \sqrt{(x+1)(x^2 - 1)} - \sqrt{4(x-1)} = \sqrt{(x+1)^2(x-1)} - \sqrt{4(x-1)} = \\ &= (x+1)\sqrt{x-1} - 2\sqrt{x-1} = (x+1-2)\sqrt{x-1} = \boxed{(x-1)\sqrt{x-1}} \end{aligned}$$