10/11/2021

361 $\overbrace{(1-\sqrt{2})}^{<0 \text{ NEGATIVO!}}\sqrt{3+2\sqrt{2}} =$

$$= -\sqrt{(1-\sqrt{2})^2(3+2\sqrt{2})} = -\sqrt{(1-2\sqrt{2}+2)(3+2\sqrt{2})} = \dots$$

OPPURE

$$= -\overbrace{(\sqrt{2}-1)}^{>0 \text{ POSITIVO!}}\sqrt{3+2\sqrt{2}} = -\sqrt{(\sqrt{2}-1)^2(3+2\sqrt{2})} =$$

$$= -\sqrt{(2-2\sqrt{2}+1)(3+2\sqrt{2})} = -\sqrt{(3-2\sqrt{2})(3+2\sqrt{2})} =$$

$$= -\sqrt{3^2-(2\sqrt{2})^2} = -\sqrt{9-8} = -\sqrt{1} = -1$$

$2^2\cdot(\sqrt{2})^2$

359 $\overbrace{(2-\sqrt{3})}^{>0}\sqrt{7+4\sqrt{3}} = \sqrt{(2-\sqrt{3})^2(7+4\sqrt{3})} =$

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

$$= \sqrt{7^2-(4\sqrt{3})^2} = \sqrt{49-4^2\cdot 3} = \sqrt{49-48} = \sqrt{1} = 1$$

360 $\overbrace{(2-\sqrt{5})}^{<0}\sqrt{9+4\sqrt{5}} =$

$$= -(\sqrt{5}-2)\sqrt{9+4\sqrt{5}} = -\sqrt{(\sqrt{5}-2)^2(9+4\sqrt{5})} =$$

$$= -\sqrt{(5+4-4\sqrt{5})(9+4\sqrt{5})} = -\sqrt{(9-4\sqrt{5})(9+4\sqrt{5})} =$$

$$= -\sqrt{81-80} = -\sqrt{1} = -1$$

$4^2 \cdot 5$

TRASPORTO FUORI DAL SEGNO DI RADICE

403 $\sqrt{12}; \qquad \sqrt{50}$

$\sqrt{12} = \sqrt{2^2 \cdot 3} = 2\sqrt{3}$ (2 : 2, quoziente 1)

$\sqrt{50} = \sqrt{2 \cdot 5^2} = 5\sqrt{2}$ (2 : 2, Q = 1)

$\sqrt{96} = \sqrt{3 \cdot 2^5} = 2^2\sqrt{3 \cdot 2^1} = 4\sqrt{3 \cdot 2} = 4\sqrt{6}$ (5 : 2, Q = 2, R = 1)

96	3
32	2^5
1	

408 $\sqrt{2^7 \cdot 3^2}$; $\sqrt{2^5 \cdot 3^4}$ $[24\sqrt{2};\ 36\sqrt{2}]$

$$\sqrt{2^7 \cdot 3^2} = 2^3 \cdot 3^1 \sqrt{2^1 \cdot 3^0} = 24\sqrt{2}$$

(QUOZIENTI: $2^3 \cdot 3^1$; RESTI: $2^1 \cdot 3^0$)

$$\sqrt{2^5 \cdot 3^4} = 2^2 \cdot 3^2 \sqrt{2^1} = 36\sqrt{2}$$

417 $\sqrt[3]{\frac{3}{8}}$; $\sqrt[4]{\frac{32}{81}}$ $\left[\frac{1}{2}\sqrt[3]{3};\ \frac{2}{3}\sqrt[4]{2}\right]$

$$\sqrt[3]{\frac{3}{8}} = \sqrt[3]{\frac{3}{2^3}} = \sqrt[3]{\left(\frac{1}{2}\right)^3 \cdot 3} = \frac{1}{2}\sqrt[3]{3}$$

$$\sqrt[4]{\frac{32}{81}} = \sqrt[4]{\frac{2^5}{3^4}} = \frac{2}{3}\sqrt[4]{\frac{2}{3^0}} = \frac{2}{3}\sqrt[4]{2}$$

414 $\sqrt{2^{10} + 2^{11}} = \sqrt{2^{10} \cdot (1+2)} = \sqrt{2^{10} \cdot 3} =$

$$= 2^5\sqrt{3} = 32\sqrt{3}$$

425 $\sqrt[3]{x^7 y^8 z^9} = x^2 y^2 z^3 \sqrt[3]{x^1 y^2 z^0} = x^2 y^2 z^3 \sqrt[3]{xy^2}$

440 $\sqrt{4a^5 - 4a^4 + a^3} =$ $[a(2a-1)\sqrt{a}]$

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

448 $\sqrt{\dfrac{4}{x^3+3x^2+3x+1} + \dfrac{4}{x^2+2x+1} + \dfrac{1}{x+1}} =$

$(x+1)^3$ $\quad$ $(x+1)^2$

$\left[\dfrac{x+3}{x+1}\sqrt{\dfrac{1}{x+1}}\right]$

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

$$= \sqrt{\frac{x^2+6x+9}{(x+1)^3}} = \sqrt{\frac{(x+3)^2}{(x+1)^3}} = \frac{x+3}{x+1}\sqrt{\frac{1}{x+1}}$$

RADICALI SIMILI

459 $2\sqrt{2} + \sqrt{3} - 3\sqrt{2} - 4\sqrt{3} + \sqrt{2}$ $[-3\sqrt{3}]$

$$2a + b - 3a - 4b + a = -3b = -3\sqrt{3}$$

$a = \sqrt{2}$

$b = \sqrt{3}$

460 $\sqrt{8}+\sqrt{2}+\sqrt{27}+\sqrt{12}=$

$=\sqrt{2^3}+\sqrt{2}+\sqrt{3^3}+\sqrt{2^2\cdot 3}=$

$=2\sqrt{2}+\sqrt{2}+3\sqrt{3}+2\sqrt{3}=3\sqrt{2}+5\sqrt{3}$

466 $\sqrt{200}+\sqrt[4]{64}-\sqrt{72}+\sqrt[3]{3}+\sqrt[12]{81}=$ $[6\sqrt{2}+2\sqrt[3]{3}]$

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

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

$=10\sqrt{2}+2\sqrt{2}-6\sqrt{2}+\sqrt[3]{3}+\sqrt[3]{3}=$

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

484 $\sqrt{2x^5y^4}-x^2\sqrt{8xy^4}-y^2\sqrt{18x^5}=$ $[-4x^2y^2\sqrt{2x}]$

$8xy^4 = 2^3$ $\quad 18x^5 = 3^2\cdot 2$

$=x^2y^2\sqrt{2x}-2x^2y^2\sqrt{2x}-3x^2y^2\sqrt{2x}=-4x^2y^2\sqrt{2x}$

513 $(\sqrt{2}+\sqrt{5})^2-(2+\sqrt{10})^2+\sqrt{90}+(2\sqrt{2}-1)(2\sqrt{2}+1)=$

$= 2+5+2\sqrt{10}-(4+10+4\sqrt{10})+\sqrt{3^2\cdot 10}+(2\sqrt{2})^2-1^2=$

($\sqrt{10}$ = $\sqrt{5}\cdot\sqrt{2}$)

$= 7+2\sqrt{10}-14-4\sqrt{10}+3\sqrt{10}+8-1=\sqrt{10}$

521 $\sqrt[3]{(3a-4b)^6}-(2\sqrt{b}-\sqrt{3a})^2(2\sqrt{b}+\sqrt{3a})^2=$

$= (3a-4b)^2-\left[(2\sqrt{b}-\sqrt{3a})(2\sqrt{b}+\sqrt{3a})\right]^2=$

$(2\sqrt{b})^2-(\sqrt{3a})^2$

$= 9a^2+16b^2-24ab-(4b-3a)^2=$

$= 9a^2+16b^2-24ab-16b^2-9a^2+24ab=0$

534 $9x^2-10=$ SCOMPORRE

$=(3x-\sqrt{10})(3x+\sqrt{10})$

535 $2x^2-4=2(x^2-2)=2(x+\sqrt{2})(x-\sqrt{2})$

543 $7 + 4\sqrt{3} = 4 + 3 + 4\sqrt{3} =$

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

545 $30 + \underbrace{10\sqrt{5}}_{\text{DOPPIO PRODOTTO}} \stackrel{?}{=} (5 + \sqrt{5})^2 = 25 + 5 + 10\sqrt{5}$ OK!

$5\sqrt{5} \leftarrow$ PRODOTTO DEI 2 TERMINI

$30 + 10\sqrt{5} = (5 + \sqrt{5})^2$

546 $9 - 4\sqrt{2} = (2\sqrt{2} - 1)^2$

doppio prodotto

Divido per 2 $\rightarrow$ $\underbrace{-2\sqrt{2}}_{\text{prodotto dei 2 termini}}$

POSSIBILITÀ: 1) $2 \quad \sqrt{2}$ NO

2) $1 \quad 2\sqrt{2}$ OK