23/11/2021

Semplifica le seguenti espressioni.

717 $\sqrt[4]{(-2)^4}$; $\sqrt[5]{(-2)^5}$ [2; −2]

718 $\sqrt[3]{(-5)^3}$; $\sqrt[6]{(-2)^6}$ [−5; 2]

719 $\sqrt[6]{(-3)^6} + \sqrt[7]{(-5)^7}$ [−2]

720 $\sqrt{(-5)^2} + \sqrt[3]{(-3)^3}$ [2]

721 $\sqrt{(2\pi - 7)^2}$ $[7 - 2\pi]$

722 $\sqrt{(4 - \pi)^2}$ $[4 - \pi]$

723 $\sqrt{25(3 - \sqrt{11})^2}$ $[5(\sqrt{11} - 3)]$

724 $\sqrt{9(\sqrt{15} - 3)^2}$ $[3(\sqrt{15} - 3)]$

717 $\sqrt[4]{(-2)^4} = |-2| = 2$ $\qquad \sqrt[5]{(-2)^5} = -2$

721 $\sqrt{(2\pi-7)^2} = |2\pi - 7| = -(2\pi - 7) = 7 - 2\pi$

perché $2\pi - 7 < 0$

$$|x| = \begin{cases} x & \text{se } x \geq 0 \\ -x & \text{se } x < 0 \end{cases}$$

724 $\sqrt{9(\sqrt{15}-3)^2} = \sqrt{9} \cdot \sqrt{(\sqrt{15}-3)^2} = 3\,|\sqrt{15} - 3| = 3(\sqrt{15} - 3)$

perché $\sqrt{15} - 3 > 0$

723 $\sqrt{25(3-\sqrt{11})^2} = 5\,|3 - \sqrt{11}| = 5(\sqrt{11} - 3)$

$3 - \sqrt{11} < 0$

593 $\dfrac{a^4 b^8}{\sqrt[3]{ab^2}}$ $\qquad \dfrac{xy^2}{\sqrt[3]{x^2 y}}$ RAZIONALIZZARE IL DENOMINATORE

$$\frac{a^4 b^8}{\sqrt[3]{ab^2}} \cdot \frac{\sqrt[3]{a^2 b}}{\sqrt[3]{a^2 b}} = \frac{a^4 b^8 \sqrt[3]{a^2 b}}{\sqrt[3]{a^3 b^3}} = \frac{a^4 b^8 \sqrt[3]{a^2 b}}{ab} = a^3 b^7 \sqrt[3]{a^2 b}$$

$$\frac{xy^2}{\sqrt[3]{x^2 y}} \cdot \frac{\sqrt[3]{xy^2}}{\sqrt[3]{xy^2}} = \frac{xy^2 \sqrt[3]{xy^2}}{xy} = y\sqrt[3]{xy^2}$$

512 $(\sqrt{3}-\sqrt{6})^2-(1+2\sqrt{2})^2+(1-\sqrt{18})(1+\sqrt{8})+\sqrt{800}+11=$

($\sqrt{18}=3\sqrt{2}$, $\sqrt{8}=2\sqrt{2}$, $\sqrt{800}=\sqrt{2^3\cdot 10^2}$)

$= 3-2\sqrt{18}+6-(1+4\sqrt{2}+8)+1+2\sqrt{2}-3\sqrt{2}-12+20\sqrt{2}+11=$

$= 3-6\sqrt{2}+6-1-4\sqrt{2}-8+1+2\sqrt{2}-3\sqrt{2}-12+20\sqrt{2}+11=$

$= 9\sqrt{2}$

514 $(3-\sqrt{3})^2(3+\sqrt{3})-(3+\sqrt{3})(3-\sqrt{3})^2+\sqrt{12}-\sqrt{75}=$

SI CANCELLANO SUBITO

$= (\underbrace{9+3}_{12}-6\sqrt{3})(3+\sqrt{3})-(3+\sqrt{3})(\underbrace{9+3}_{12}-6\sqrt{3})+2\sqrt{3}-5\sqrt{3}=$

SCRIVIAMO PER ESERCIZIO...

$= 36+12\sqrt{3}-18\sqrt{3}-18-36+18\sqrt{3}-12\sqrt{3}+18-3\sqrt{3}=$

$= \boxed{-3\sqrt{3}}$

517 $(\sqrt{3}+2)^3-(\sqrt{3}-2)^3=$

$= 3\sqrt{3}+18+12\sqrt{3}+8-(3\sqrt{3}-18+12\sqrt{3}-8)=$

$(\sqrt{3})^3 \quad 3(\sqrt{3})^2\cdot 2 \quad 3\cdot\sqrt{3}\cdot 2^2$

$= 3\sqrt{3}+18+12\sqrt{3}+8-3\sqrt{3}+18-12\sqrt{3}+8=52$

848 $\sqrt[3]{2\sqrt{\frac{1}{2}}} \cdot \sqrt{2} =$

Risolvere con le potenze a esponente razionale

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

$$= 2^{\frac{4}{6}} = 2^{\frac{2}{3}} = \sqrt[3]{2^2} = \sqrt[3]{4}$$