27/10/2020

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

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

$$+\underbrace{(2\sqrt{2})^2}_{2^2\cdot(\sqrt{2})^2}-1=$$

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

$$=\boxed{\sqrt{10}}$$

SONO UGUALI

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

$$=\sqrt{12}-\sqrt{75}=\sqrt{2^2\cdot 3}-\sqrt{5^2\cdot 3}=2\sqrt{3}-5\sqrt{3}=\boxed{-3\sqrt{3}}$$

**515** $(2-\sqrt{2})^3:(-2)+(\sqrt{14}-2)(\sqrt{14}+2)+\sqrt{18}-\sqrt{50} =$

$$=\left(2^3+3\cdot 2^2(-\sqrt{2})+3\cdot 2\underbrace{(-\sqrt{2})^2}_{+2}+(-\sqrt{2})^3\right):(-2)+14-4$$

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

$$=\left(8-12\sqrt{2}+12-\overbrace{\sqrt{2^3}}^{-2\sqrt{2}}\right):(-2)+10+3\sqrt{2}-5\sqrt{2}=$$

$$=\left(20-14\sqrt{2}\right):(-2)+10-2\sqrt{2}=$$

$$=\cancel{-10}+7\sqrt{2}+\cancel{10}-2\sqrt{2}=\boxed{5\sqrt{2}}$$

$20:(-2)$ $\quad\left\|\quad\dfrac{-14\sqrt{2}}{-2}\right.$

**516** $\left[(\sqrt{18}-\sqrt{50}+\sqrt{3}+\sqrt{12})^2+(\sqrt{2}-6)(\sqrt{2}+6)+\sqrt{600}\right]^2+2\sqrt{24}=$

$$=\left[\left(\sqrt{3^2\cdot 2}-\sqrt{5^2\cdot 2}+\sqrt{3}+\sqrt{2^2\cdot 3}\right)^2+2-36+10\sqrt{6}\right]^2+2\sqrt{3\cdot 2^3}=$$

$$=\left[\left(3\sqrt{2}-5\sqrt{2}+\sqrt{3}+2\sqrt{3}\right)^2-34+10\sqrt{6}\right]^2+2\cdot 2\sqrt{3\cdot 2}=$$

$$=\left[\left(-2\sqrt{2}+3\sqrt{3}\right)^2-34+10\sqrt{6}\right]^2+4\sqrt{6}=$$

$$=\left[8+27-12\sqrt{6}-34+10\sqrt{6}\right]^2+4\sqrt{6}=$$

$$=\left[1-2\sqrt{6}\right]^2+4\sqrt{6}=1+24-\cancel{4\sqrt{6}}+\cancel{4\sqrt{6}}=\boxed{25}$$

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

$= (\sqrt{3})^3 + 3\cdot 3\cdot 2 + 3\cdot\sqrt{3}\cdot 4 + 8 -$

$- \left((\sqrt{3})^3 + 3\cdot 3\cdot(-2) + 3\cdot\sqrt{3}\cdot 4 - 8\right) =$

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

$\sqrt{3^3}$

$= \boxed{52}$

**518** $\sqrt{3\sqrt{3}-4}\cdot\sqrt{3\sqrt{3}+4}+(1+\sqrt{11})^2 =$

$= \sqrt{(3\sqrt{3}-4)\cdot(3\sqrt{3}+4)} + 1 + 11 + 2\sqrt{11} =$

$= \sqrt{(3\sqrt{3})^2 - 4^2} + 12 + 2\sqrt{11} =$

$= \sqrt{27-16} + 12 + 2\sqrt{11} = \sqrt{11} + 12 + 2\sqrt{11} =$

$= \boxed{12 + 3\sqrt{11}}$

# ANCORA SULLA RAZIONALIZZAZIONE

**590** $\dfrac{1}{\sqrt[3]{2}}$ $\qquad$ $\dfrac{1}{\sqrt[3]{3}}$

$$\frac{1}{\sqrt[3]{2}} = \frac{1}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}} = \frac{\sqrt[3]{4}}{\cancel{\sqrt[3]{2^{3}}}} = \frac{\sqrt[3]{4}}{2}$$

$$\frac{1}{\sqrt[3]{3}} = \frac{1}{\sqrt[3]{3}} \cdot \frac{\sqrt[3]{3^2}}{\sqrt[3]{3^2}} = \frac{\sqrt[3]{9}}{\cancel{\sqrt[3]{3^{3}}}} = \frac{\sqrt[3]{9}}{3}$$

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

$7 - 4 = 3$

$$\frac{15}{\sqrt[10]{3^7}} = \frac{15}{\sqrt[10]{3^7}} \cdot \frac{\sqrt[10]{3^3}}{\sqrt[10]{3^3}} = \frac{15\sqrt[10]{27}}{\cancel{\sqrt[10]{3^{10}}}} = \frac{\overset{5}{\cancel{15}}\sqrt[10]{27}}{\cancel{3}} = 5\sqrt[10]{27}$$