11/11/2021

520 $(1+\sqrt{a})^3-\sqrt{a}(1+\sqrt{a})^2-(1-\sqrt{a})^2=$

$$=1^3+3\cdot1^2\cdot\sqrt{a}+3\cdot1\cdot(\sqrt{a})^2+(\sqrt{a})^3-\sqrt{a}\,(1+2\sqrt{a}+a)-$$

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

$$=\cancel{1}+\underline{3\sqrt{a}}+\cancel{3a}+\underbrace{\cancel{\sqrt{a^3}}}_{a\sqrt{a}}-\underline{\sqrt{a}}-\overset{-\sqrt{a}\cdot2\sqrt{a}}{\cancel{2a}}-\cancel{a\sqrt{a}}-\cancel{1}+\underline{2\sqrt{a}}-\cancel{a}=$$

$$=4\sqrt{a}$$

445 $\sqrt{8t^6+12t^4+6t^2+1}=$

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

390 $\sqrt{a\sqrt[3]{a^2}}$, con $a\geq0$

$$=\sqrt{\sqrt{a^2\sqrt[3]{a^2}}}=\sqrt{\sqrt{\sqrt[3]{a^6\cdot a^2}}}=\sqrt[\cancel{12}\,3]{a^{\cancel{8}\,2}}=\sqrt[3]{a^2}$$

474 $\sqrt{\frac{3}{4}}+\sqrt{\frac{27}{4}}+\sqrt{\frac{1}{2}}+\sqrt{\frac{25}{2}}=$

$$=\sqrt{\frac{3}{2^2}}+\sqrt{\frac{3^3}{2^2}}+\sqrt{\frac{1}{2}}+\sqrt{\frac{5^2}{2}}=$$

$$=\frac{1}{2}\sqrt{3}+\frac{3}{2}\sqrt{3}+\sqrt{\frac{1}{2}}+5\sqrt{\frac{1}{2}}=\frac{\cancel{4}^{2}}{\cancel{2}}\sqrt{3}+6\sqrt{\frac{1}{2}}=$$

$$=2\sqrt{3}+6\sqrt{\frac{1}{2}}=2\sqrt{3}+6\cdot\frac{1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=$$

RAZIONALIZZAZIONE DEL DENOMINATORE

$$=2\sqrt{3}+\frac{\cancel{6}^{3}\sqrt{2}}{\cancel{2}}=2\sqrt{3}+3\sqrt{2}$$

RAZIONALIZZAZIONE DEL DENOMINATORE DI UNA FRAZIONE

OBIETTIVO: far "sparire" un radicale dal denominatore di una frazione

ESEMPI

1) $\frac{1}{\sqrt{2}}=\frac{1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\frac{\sqrt{2}}{2}$

2) $\frac{5}{\sqrt{3}}=\frac{5}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{5\sqrt{3}}{3}$

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

593 $\frac{a^4b^8}{\sqrt[3]{ab^2}}\cdot\frac{\sqrt[3]{a^2b}}{\sqrt[3]{a^2b}}=\frac{a^4b^8\sqrt[3]{a^2b}}{\sqrt[3]{a^3b^3}}=\frac{\cancel{a^4}^{3}\cancel{b^8}^{7}\sqrt[3]{a^2b}}{\cancel{a}\cancel{b}}=$

$$=a^3b^7\sqrt[3]{a^2b}$$

600 $\frac{2}{\sqrt{3}-1}\cdot\frac{\sqrt{3}+1}{\sqrt{3}+1}=\frac{2(\sqrt{3}+1)}{(\sqrt{3})^2-1^2}=$

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

609 $\overbrace{\frac{2\sqrt{2}-\sqrt{3}}{2\sqrt{2}+\sqrt{3}}\cdot\frac{2\sqrt{2}-\sqrt{3}}{2\sqrt{2}-\sqrt{3}}}^{(2\sqrt{2}-\sqrt{3})^2}=\frac{8+3-4\sqrt{6}}{8-3}=$

$$=\frac{11-4\sqrt{6}}{5}$$

618 $\frac{1}{\sqrt{x+2}+\sqrt{x+1}}\cdot\frac{\sqrt{x+2}-\sqrt{x+1}}{\sqrt{x+2}-\sqrt{x+1}}=\frac{\sqrt{x+2}-\sqrt{x+1}}{x+2-(x+1)}=$

$$=\frac{\sqrt{x+2}-\sqrt{x+1}}{\cancel{x}+2-\cancel{x}-1}=\sqrt{x+2}-\sqrt{x+1}$$