Lezione 42

$$\left[\left(\frac{2}{3}-\frac{1}{2}-\frac{2}{1}\right)\cdot\left(\frac{1}{2}+\frac{1}{4}-\frac{1}{3}\right)^2:\left(1+\frac{3}{4}-\frac{4}{3}\right)^2\right]:\frac{22}{3}+\underbrace{\left(-\frac{1}{2}\right)^5\cdot\left(-\frac{1}{2}\right)^3}:\left[\left(-\frac{1}{2}\right)^3\right]^2$$

$$=\left[\left(\frac{4-3-12}{6}\right)\cdot\left(\frac{6+3-4}{12}\right)^2:\left(\frac{12+9-16}{12}\right)^2\right]:\frac{22}{3}+\left(-\frac{1}{2}\right)^8:\left(-\frac{1}{2}\right)^6=$$

$$=\left[\left(-\frac{11}{6}\right)\cdot\left(\frac{5}{12}\right)^2:\left(\frac{5}{12}\right)^2\right]:\frac{22}{3}+\left(-\frac{1}{2}\right)^2=$$

$2\cdot 3:3$

$$=\left(-\frac{11}{6}\right):\frac{22}{3}+\frac{1}{4}=$$

$$=-\frac{\cancel{11}^{\,1}}{\cancel{6}_{\,2}}\cdot\frac{\cancel{3}^{\,1}}{\cancel{22}_{\,2}}+\frac{1}{4}=-\frac{1}{4}+\frac{1}{4}=0$$

$$\sqrt{\frac{2-\sqrt{2}}{2+\sqrt{2}}} \cdot \sqrt{2} \qquad \frac{4-2\sqrt{2}}{4-2}$$

$$\frac{\sqrt{2-\sqrt{2}}}{\sqrt{2+\sqrt{2}}} \cdot \frac{\sqrt{2+\sqrt{2}}}{\sqrt{2+\sqrt{2}}} \cdot \sqrt{2}$$

$$\frac{\sqrt{4-2}}{2+\sqrt{2}} \cdot \sqrt{2} = \frac{2}{2+\sqrt{2}} \cdot \frac{2-\sqrt{2}}{2-\sqrt{2}}$$

$$\sqrt{\frac{2\sqrt{3}-3}{\sqrt{3}}} \qquad \frac{(2-\sqrt{3})(2+\sqrt{3})}{\underbrace{\hphantom{xxxxxx}}_{4-3}}$$

$$\sqrt{\frac{\cancel{\sqrt{3}}\left(2-\frac{3}{\sqrt{3}}\right)}{\cancel{\sqrt{3}}}} = \frac{\cancel{3}\sqrt{3}}{\cancel{3}}$$

$$= \sqrt{2-\frac{3}{\sqrt{3}}} = \sqrt{2-\sqrt{3}}$$

$$= \sqrt{\frac{a+\sqrt{a^2-b}}{2}} - \sqrt{\frac{a-\sqrt{a^2-b}}{2}}$$

$$\sqrt{\frac{2+\sqrt{4-3}}{2}} - \sqrt{\frac{2-\sqrt{4-3}}{2}}$$

$$\sqrt{\frac{3}{2}} - \sqrt{\frac{1}{2}}$$

$$\frac{\sqrt{3}}{\sqrt{2}} - \frac{1}{\sqrt{2}} = \frac{\frac{\sqrt{6}}{2} - \frac{\sqrt{2}}{2}}{} \quad \frac{\sqrt{6}-\sqrt{2}}{2}$$

$$a^3-(-b)^3-(a+b)^3-\frac{1}{3}a(1+3b)(1-3b)=$$

$$=a^3-(-b^3)-(a^3+b^3+3a^2b+3ab^2)-\frac{1}{3}a(1-9b^2)=$$

$$=\cancel{a^3}+\cancel{b^3}-\cancel{a^3}-\cancel{b^3}-\cancel{3a^2b}-3ab^2-\frac{1}{3}a+\cancel{\frac{9}{3}ab^2}=$$

$$=-3ab^2-\frac{1}{3}a$$

$$(x-2y)^3-(2x-y)^3-6xy(x+y)+7y^3+8x^3=$$

$$=x^3-8y^3+3x^2(-2y)+3x(-2y)^2-\left[8x^3-y^3+3(2x)^2(-y)+3(2x)(-y)^2\right]-6x^2y-6xy^2+7y^3+8x^3=$$

$$=x^3-8y^3-6x^2y+12xy^2-\left[8x^3-y^3-12x^2y+6xy^2\right]-6x^2y-6xy^2+7y^3+8x^3$$

$$=x^3-\cancel{8y^3}-\cancel{6x^2y}+\cancel{12xy^2}-8x^3+\cancel{y^3}+\cancel{12x^2y}-\cancel{6xy^2}-\cancel{6x^2y}-\cancel{6xy^2}+\cancel{7y^3}+\cancel{8x^3}=$$

$$=$$

$$=0$$