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$(x^2+1)\cdot 2x^2 - 3x^2\cdot(x^2-x+1) - (-x^4+x^2-x)\cdot x^1 =$

$= 2x^2\cdot x^2 + 2x^2 - 3x^2\cdot x^2 + 3x^2\cdot x^1 - 3x^2 - 1\cdot(-x^4+x^2\cdot x^1 = x^1\cdot x^1) =$

$= 2x^4 + 2x^2 - 3x^4 + 3x^3 - 3x^2 + x^4 - x^3 + x^2 =$

$= (2-3+1)x^4 + (3-1)x^3 + (2-3+1)x^2 =$

$= 2x^3$

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$$x^2y^2 + \left[xy\left(\frac{x}{2} + \frac{3}{2}y + 1\right) - x\left(xy + \frac{3}{2}y^2 + y\right)\right]^2 \cdot xy - \frac{1}{4}x^5y^3 =$$

$$= x^2y^2 + \left[xy \cdot \frac{1}{2}x + xy \cdot \frac{3}{2}y + xy - x \cdot xy - x \cdot \frac{3}{2}y^2 - x \cdot y\right]^2 \cdot xy - \frac{1}{4}x^5y^3 =$$

$$= x^2y^2 + \left[\frac{1}{2}x^2y + \frac{3}{2}xy^2 + xy - x^2y - \frac{3}{2}xy^2 - xy\right]^2 \cdot xy - \frac{1}{4}x^5y^3 =$$

$$= x^2y^2 + \left[\left(\frac{1}{2} - 1\right)x^2y\right]^2 \cdot xy - \frac{1}{4}x^5y^3 =$$

$$= x^2y^2 + \left[\left(\frac{1}{2} - \frac{2}{2}\right)x^2y\right]^2 \cdot xy - \frac{1}{4}x^5y^3 =$$

$$= x^2y^2 + \left[-\frac{1}{2}x^2y\right] \cdot xy - \frac{1}{4}x^5y^3 =$$

$$= x^2y^2 + \frac{1}{4}x^4y^2 \cdot xy - \frac{1}{4}x^5y^3 =$$

$$= x^2y^2 + \frac{1}{4}x^5y^3 - \frac{1}{4}x^5y^3 = \boxed{x^2y^2}$$

$$(a+2)\left\{\left[6a^2b^2-3ab\left(2a-\frac{1}{3}b\right)+b^2\right]\right\}\cdot b^2-3ab^3\cdot\left(\frac{1}{3}ab+b^2\right)=$$

$$=(a+2)\cdot\left\{\left[6a^2b^2-6a^2b^2+ab^2+b^2\right]\right\}\cdot b^2-a^2b^4-3ab^4=$$

$$=(a+2)\cdot\left\{ab^2+b^2\right\}\cdot b^2-a^2b^4-3ab^4=$$

$$=\left(a^2b^2+ab^2+2ab^2+2b^2\right)\cdot b^2-a^2b^4-3ab^4=$$

$$=\left(a^2b^2+3ab^2+2b^2\right)\cdot b^2-a^2b^4-3ab^4=$$

$$=a^2b^4+3ab^4+2b^4-a^2b^4-3ab^4=$$

$$=2b^4$$

$$\left[\left(\frac{3}{2}ab^2 - 0{,}2a^2b\right)\left(2a + \frac{20}{3}b\right) - \left(10b^2 - 0{,}4a^2\right)\cdot ab + \frac{4}{3}a^2b^2\right]^2 =$$

$$= \left[\left(\frac{3}{2}ab^2 - \frac{21}{105}a^2b\right)\cdot\left(2a + \frac{20}{3}b\right) - \left(10b^2 - \frac{4^2}{105}a^2\right)\cdot ab + \frac{4}{3}a^2b^2\right]^2 =$$

$$= \left[\left(\frac{3}{2}a^2b^2 + \frac{3}{2}\cdot\frac{20}{3}ab^3 - \frac{1}{5}\cdot 2a^3b - \frac{1}{15}\cdot\frac{4}{3}a^2b^2\right) - \left(10ab^3 - \frac{2}{5}a^3b\right) + \frac{4}{3}a^2b^2\right]^2 =$$

$$= \left[3a^2b^2 + 10ab^3 - \frac{2}{5}a^3b - \frac{4}{5}a^2b^2 - 10ab^3 + \frac{2}{5}a^3b + \frac{4}{3}a^2b^2\right]^2 =$$

$$= \left[3a^2b^2\right]^2 = \boxed{9a^4b^4}$$

DIVISIONE POLINOMIO - MONOMIO

$$(12a^4y^5 - 4a^3y^2 + 8ay^4) : (-4ay^2) =$$

$$= \left[12a^4y^5 : (-4ay^2) + 4a^3y^2 : 4ay^2 - 8ay^4 : 4ay^2\right] =$$

$$= -3a^3y^3 + a^2 - 2y^2$$