La Vitale Katia — Classe I° B

13) $\left[\left(3m^3x^3\right)\cdot\left(\frac{1}{6}xy-\frac{1}{8}amy-\frac{3}{4}x\right)\right]\cdot\left(\frac{1}{5}xy^3\right)-\frac{1}{5}m^3x^4y^3\cdot\left(\frac{1}{2}xy-\frac{1}{3}amy-\frac{3}{4}x\right)=$

$=\left[\frac{1}{2}m^3x^4y-\frac{1}{3}am^4x^3y-\frac{3}{4}m^3x^4\right]\cdot\left(\frac{1}{5}xy^3\right)-\frac{1}{10}m^3x^5y^4+\frac{1}{15}am^4x^4y^4+\frac{3}{20}m^3x^5y^3=$

$=\frac{1}{10}m^3x^5y^4-\frac{1}{15}am^4x^4y^4-\frac{3}{20}m^3x^5y^3-\frac{1}{10}m^3x^5y^4+\frac{1}{15}am^4x^4y^4+\frac{3}{20}m^3x^5y^3=$

$=0$.

17) $2xy^2\cdot(x^2-2xy-3y^2)-xy\cdot(x^2y-4xy^2-6y^3)=$

$=2x^3y^2-4x^2y^3-6xy^4-x^3y^2+4x^2y^3+6xy^4=$

$=x^3y^2$.

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

$=\frac{1}{3}x^2-xy-xy+\frac{1}{6}y^2-\frac{1}{6}y^2+2xy-\frac{1}{3}x^2=0$.

25) $(a+b)\cdot(2a-3b)+(4a-b)\cdot(a-5b)+(a-2b)\cdot(a-11b)+35ab=$

$=2a^2-3ab+2ab-3b^2+4a^2-20ab-ab+5b^2+a^2-11ab-2ab+$
$+22b^2+35ab=$

$=7a^2+24b^2$.

29) $a\cdot\{5a-[7ab-(1+2ab-3a)-(ab-5)]\}-2a\cdot(a-2ab-2)-\{-[-(-a)^2]^3\}^2=$

$=a\cdot\{5a-[7ab-1-2ab+3a-ab+5]\}-2a^2+4a^2b+4a-\{-[-(+a^2)]^3\}^2=$

$=a\cdot\{5a-[4ab-1+3a+5]\}-2a^2+4a^2b+4a-\{-[-a^2]^3\}^2=$

$=a\cdot\{5a-4ab+1-3a-5\}-2a^2+4a^2b+4a-\{-[-a^6]\}^2=$

$=a\cdot\{+2a-4ab+1-5\}-2a^2+4a^2b+4a-\{+a^6\}^2=$

$= 2a^2 - 4a^2b + a - 5a - 2a^2 + 4a^2b + 4a - a^{12} = -a^{12}$.

33) $(-a+3)\cdot(b-3) =$

$= -ab + 3a + 3b - 9$.

$(-a+1)\cdot(a-4) =$

$= -a^2 + 4a + a - 4 =$

$= -a^2 + 5a - 4$.

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

$= 8x^2 + 12xy - 6xy - 9y^2 =$

$= 8x^2 + 6xy - 9y^2$.

$(-6x-4y)\cdot(5x-3y) =$

$= -30x^2 + 18xy - 20xy + 12y^2 =$

$= -30x^2 - 2xy + 12y^2$.

37) $(ab+ac+bc)\cdot(a-b+c) =$

$= a^2b - ab^2 + abc + a^2c - abc + ac^2 + abc - b^2c + bc^2 =$

$= a^2b - ab^2 + a^2c + ac^2 + abc - b^2c + bc^2$.

41) $(1-x+x^4-x^5)\cdot(1+x+x^2+x^3) =$

$= 1 + x + x^2 + x^3 - x - x^2 - x^3 - x^4 + x^4 + x^5 + x^6 + x^7 - x^5 - x^6 - x^7 - x^8 =$

$= 1 - x^8$.

45) $(2a-5b)\cdot(3a+4b) - (a+2b)\cdot(6a-10b) + 8ab =$

$= 6a^2 + 8ab - 15ab - 20b^2 - (6a^2 - 10ab + 12ab - 20b^2) + 8ab =$

$= 6a^2 + 8ab - 15ab - 20b^2 - 6a^2 + 10ab - 12ab + 20b^2 + 8ab =$

$= 0$.

$(x+2y)\cdot(3x-y) - (3x+y)\cdot(2x-y) - 3x\cdot(2y-x) =$

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

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

$= 3x^2 - xy + 6xy - 2y^2 - 6x^2 + xy + y^2 - 6xy + 3x^2 =$

$= -y^2$.

48) $\left(\frac{1}{2}a - 3b\right)\cdot\left(2a + \frac{1}{3}b\right) - \left(\frac{1}{3}a - 2b\right)\cdot\left(3a + \frac{1}{2}b\right) =$

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

$= a^2 + \frac{1}{6}ab - 6ab - b^2 - a^2 - \frac{1}{6}ab + 6ab + b^2 = 0.$

53) $a^2\cdot(b-c) - b^2\cdot(a-c) + c^2\cdot(a-b) - (a-b)\cdot(b-c)\cdot(a-c) =$

$= a^2b - a^2c - ab^2 + b^2c + ac^2 - bc^2 - (ab - ac - b^2 + bc)\cdot(a-c) =$

$= a^2b - a^2c - ab^2 + b^2c + ac^2 - bc^2 - \left(a^2b - abc - a^2c + ac^2 - ab^2 + b^2c + abc - bc^2\right) =$

$= a^2b - a^2c - ab^2 + b^2c + ac^2 - bc^2 - a^2b + abc + a^2c - ac^2 + ab^2 - b^2c - abc + bc^2 =$

$= 0.$

54) $\left[a\cdot(b+c)\cdot(b+c-a) + b\cdot(a+c)\cdot(a+c-b) + c\cdot(a+b)\cdot(a+b-c)\right]\cdot x =$

$= \left[a\cdot(b^2 + bc - ab + bc + c^2 - ac) + b\cdot(a^2 + ac - ab + ac + c^2 - bc) + c\cdot(a^2 + \right.$

$\left. + ab - ac + ab + b^2 - bc)\right]\cdot x =$

$= \left[ab^2 + abc - a^2b + abc + ac^2 - a^2c + a^2b + abc - ab^2 + abc + bc^2 - b^2c + \right.$

$\left. + a^2c + abc - ac^2 + abc + b^2c - bc^2\right]\cdot x =$

$= ab^2x + abcx - a^2bx + abcx + ac^2x - a^2cx + a^2bx + abcx - ab^2x +$

$+ abcx + bc^2x - b^2cx + a^2cx + abcx - ac^2x + abcx + b^2cx - bc^2x =$

$= 6abcx.$