11) $3a^2b - \{2a \cdot (a^2 - 2b^2) - [3a^2 \cdot (a + 2b) - a^2 \cdot (3b + a)]\} =$

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

$= 3a^2b - \{2a^3 - 4ab^2 - 3a^3 - 6a^2b + 3a^2b + a^3\} =$

$= 3a^2b - 2a^3 + 4ab^2 + 3a^3 + 6a^2b - 3a^2b - a^3 = \quad 4ab^2 \underline{}$

15) $2ab^2 \cdot (a^2 - 2ab - 3b^2) - ab \cdot (a^2b - 4ab^2 - 6b^3) =$

$= 2a^3b^2 - 4a^2b^3 - 6ab^4 - a^3b^2 + 4a^2b^3 + 6ab^4 = \quad a^3b^2 \underline{}$

19) $3a \cdot (a - 2b) - 4b \cdot (2a - b) - 2 \cdot (a^2 + 2b^2) - a^2 + 2ab \cdot (6a^2 + 4ab + 10b^2) - 4ab \cdot$
$(5b^2 + 2ab + 3a^2) =$

$= 3a^2 - 6ab - 8ab + 4b^2 - 2a^2 - 4b^2 - a^2 + 12a^3b + 8a^2b^2 + 20ab^3 +$
$-20ab^3 - 8a^2b^2 - 12a^3b =$

$= -14ab \underline{}$

23) $(2a + 3b) \cdot a - 2b \cdot (2a + 3b) - (8b^2 + ab) - a^2 + b \cdot (2a + 3b) =$

$= 2a^2 + 3ab - 4ab - 6b^2 - 8b^2 - ab - a^2 + 2ab + 3b^2 =$

$= a^2 - 11b^2 \underline{}$

27) $(-3a) \cdot [a \cdot (a + b - c) + b \cdot (-a + b + c) + c \cdot (a - b + c) + a^2 - b^2 - c^2 + (-2a^2)] =$

$= (-3a) \cdot [a^2 + ab - ac - ab + b^2 + bc + ac - bc + c^2 + a^2 - b^2 - c^2 - 2a^2] =$

$= -3a^3 - 3a^2b + 3a^2c + 3a^2b - 3ab^2 - 3abc - 3a^2c + 3abc - 3ac^2 - 3a^3 + 3ab^2 + 3ac^2 + 6a^3 =$

$= 0$

31) $(2a + 3b) \cdot (a - 2b) =$

$= 2a^2 - 4ab + 3ab - 6b^2 =$

$= 2a^2 - ab - 6b^2 .$

$(a - 4x) \cdot \left(\frac{1}{2}a + 3x\right) =$

$= \frac{1}{2}a^2 + 3ax - 2ax - 12x^2 =$

$= \frac{1}{2}a^2 + ax - 12x^2 .$

35) $(x + a) \cdot (y + b) =$

$= xy + bx + ay + ab .$

$(2m + ab) \cdot (2ab - m) =$

$= 4abm - 2m^2 + 2a^2b^2 - abm =$

$= 3abm - 2m^2 + 2a^2b^2 .$

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

$= x^5 + x^4 + x^3 + x^2 + x - x^4 - x^3 - x^2 - x - 1 =$

$= x^5 - 1 .$

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

$= x^5 - x^4 + x^3 - x^2 + x + x^4 - x^3 + x^2 - x + 1 =$

$= x^5 + 1 .$

43) $(a^n - 4a^{n-1} + 5a^{n-2} + a^{n-3}) \cdot (a - 1) =$

$= a^{n+1} - 4a^{n-1+1} + 5a^{n-2+1} + a^{n-3+1} - a^n + 4a^{n-1} - 5a^{n-2} - a^{n-3} =$

$= a^{n+1} - 4a^n + 5a^{n-1} + a^{n-2} - a^n + 4a^{n-1} - 5a^{n-2} - a^{n-3} =$

$= a^{n+1} - 5a^n + 9a^{n-1} - 4a^{n-2} - a^{n-3} .$

47) $(2x - 3y) \cdot (x + 4y) - (3x - 2y) \cdot (4x + 6y) + 5x \cdot (2x + y) =$

$= 2x^2 + 8xy - 3xy - 12y^2 - (12x^2 + 18xy - 8xy - 12y^2) + 10x^2 + 5xy =$

$= 2x^2 + 8xy - 3xy - 12y^2 - 12x^2 - 18xy + 8xy + 12y^2 + 10x^2 + 5xy =$

$= 0 .$

51) $(a+b-c) \cdot (a-b) - (a-b-c) \cdot (b-c) + (a-b+c) \cdot (c-a) =$

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

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

$= 0$

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

$= 3a^2b^2 + 10ab^3 - \frac{2}{5} a^3b - \frac{4}{3} a^2b^2 - 10ab^3 + \frac{2}{5} a^3b + \frac{1}{3} a^2b^2 =$

$= \left(\frac{9+1-4}{3}\right) a^2b^2 =$

$= \frac{6}{3} a^2b^2 = 2\, a^2b^2$