1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

[1] $x^6 - 7\,x^2 + 3\,x^3 + -x^3 - 2\,x^2 = x^6 + 2\,x^3 - 9\,x^2$

[2] $2\,x^5 + 3\,x^4 + 4\,x^6 + 3\,x^4 + x^3 + -2\,x^6 + 4\,x^5 = 2\,x^6 + 6\,x^5 + 6\,x^4 + x^3$

[3] $5\,x^3 + -3\,x^5 + 3\,x^2 - 4\,x + -x^5 + 3\,x^2 = -4\,x^5 + 5\,x^3 + 6\,x^2 - 4\,x$

[4] $3\,x^5 + 2\,x^3 + 3\,x + -x^5 + 3\,x^4 - 4\,x^3 + x^6 + 4\,x^4 + 2\,x^3 = x^6 + 2\,x^5 + 7\,x^4 + 3\,x$

[5] $x^6 - 3\,x^5 - 4\,x^3 + -x^6 - 4\,x^5 + -4\,x^5 - x^4 + x = -11\,x^5 - x^4 - 4\,x^3 + x$

[6] $2\,x^5 - 4\,x + -3\,x^5 - 3\,x^4 + x^2 + (-2\,x^6 - 2\,x^5 - 3\,x) = -2\,x^6 - 3\,x^5 - 3\,x^4 + x^2 - 7\,x$

[7] $4\,x^6 + 3\,x^4 - x + x^6 - x^3 + 4\,x + 4\,x^6 + 3\,x^3 + 2\,x = 9\,x^6 + 3\,x^4 + 2\,x^3 + 5\,x$

[8] $4\,x^5 + x^4 - 4\,x^2 + -4\,x^3 + x^2 - x + -3\,x^6 - 2\,x^4 - 3\,x^3 = -3\,x^6 + 4\,x^5 - x^4 - 7\,x^3 - 3\,x^2 - x$

[9] $3\,x^3 + -3\,x^6 + 2\,x^5 + 2\,x^3 + 3\,x^5 + 3\,x^4 - 4\,x = -3\,x^6 + 5\,x^5 + 3\,x^4 + 5\,x^3 - 4\,x$

[10] $4\,x^3 + -3\,x^2 + -x^3 - 4\,x^2 = 3\,x^3 - 7\,x^2$

Ejercicio 2: Realiza las siguientes sumas de polinomios:

[1] $0 + 0 + 0 = 0$

[2] $3\,x^2y + xy^2 + -x^2y^2 + -4\,xy^2 - xy = -x^2y^2 + 3\,x^2y - 3\,xy^2 - xy$

[3] $4\,x^2y^2 + 24\,x^2y^2 + 4\,x^2y^2 - 2\,x^2y + 16\,xy = 32\,x^2y^2 - 2\,x^2y + 16\,xy$

[4] $18\,x^2y^2 - 3\,x^2y + 9\,xy^2 + -36\,x^2y - 36\,xy + 3\,x^2y^2 - 30\,xy^2 = 21\,x^2y^2 - 39\,x^2y - 21\,xy^2 - 36\,xy$

[5] $32\,x^2y - 12\,xy + 64\,x^2y^2 + 16\,xy^2 + 4\,xy + 64\,x^2y^2 + 32\,x^2y = 128\,x^2y^2 + 64\,x^2y + 16\,xy^2 - 8\,xy$

[6] $20\,x^2y^2 - 100\,xy^2 + 25\,x^2y + 25\,x^2y^2 + 100\,xy = 45\,x^2y^2 + 25\,x^2y - 100\,xy^2 + 100\,xy$

[7] $18\,x^2y^2 - 72\,xy^2 + -6\,x^2y - 72\,xy^2 + 18\,xy + 18\,x^2y^2 - 36\,x^2y - 72\,xy = 36\,x^2y^2 - 42\,x^2y - 144\,xy^2 - 54\,xy$

[8] $161\,xy + 196\,x^2y + 7\,xy^2 + -21\,x^2y^2 - 70\,xy = -21\,x^2y^2 + 196\,x^2y + 7\,xy^2 + 91\,xy$

[9] $24\,x^2y^2 - 264\,x^2y + 8\,x^2y^2 - 128\,xy + 8\,x^2y^2 - 128\,x^2y = 40\,x^2y^2 - 392\,x^2y - 128\,xy$

[10] $243\,x^2y^2 - 360\,xy^2 + -9\,x^2y - 27\,xy^2 + 36\,xy + -162\,x^2y^2 + 18\,xy = 81\,x^2y^2 - 9\,x^2y - 387\,xy^2 + 54\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

[1] $0 - (0) + (0) = 0$

[2] $x^2y^2 + 2\,x^2y + 3\,x^2y^2 - x^2y - 4\,xy - (3\,x^2y + xy^2) = 4\,x^2y^2 - 2\,x^2y - xy^2 - 4\,xy$

[3] $-8\,xy^2 + 6\,x^2y^2 + 8\,x^2y + 6\,xy^2 - (-8\,x^2y + 4\,xy^2) = 6\,x^2y^2 + 16\,x^2y - 6\,xy^2$

[4] $-12\,xy - (6\,x^2y^2 + 6\,x^2y - 12\,xy^2) + (-9\,x^2y^2 + 9\,xy^2) = -15\,x^2y^2 - 6\,x^2y + 21\,xy^2 - 12\,xy$

[5] $-12\,x^2y^2 - 40\,xy + 16\,x^2y + 16\,xy^2 + 48\,xy - (36\,x^2y - 16\,xy^2) = -12\,x^2y^2 - 20\,x^2y + 32\,xy^2 + 8\,xy$

[6] $-100\,x^2y - 50\,xy^2 - 20\,xy + -5\,x^2y^2 + 20\,x^2y + 20\,xy^2 - (75\,x^2y - 5\,xy^2) = -5\,x^2y^2 - 155\,x^2y - 25\,xy^2 - 20\,xy$

[7] $12\,x^2y^2+36\,x^2y+6\,xy^2-(-36\,xy^2+72\,xy)+(-72\,x^2y^2+42\,xy) = -60\,x^2y^2+36\,x^2y+42\,xy^2-30\,xy$

[8] $-49\,x^2y^2+21\,x^2y+7\,xy^2+-28\,x^2y+196\,xy^2-(-49\,x^2y) = -49\,x^2y^2+42\,x^2y+203\,xy^2$

[9] $192\,xy^2+160\,xy+-256\,x^2y+24\,xy^2-(-16\,x^2y^2-64\,x^2y+256\,xy^2) = 16\,x^2y^2-192\,x^2y-40\,xy^2+160\,xy$

[10] $-405\,x^2y^2-27\,xy^2-(-81\,x^2y^2+9\,x^2y-9\,xy)+(-9\,x^2y^2+405\,x^2y) = -333\,x^2y^2+396\,x^2y-27\,xy^2+9\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

[1] $(0)\cdot(0) = 0$

[2] $(-2\,b^2xyz)\cdot(-2\,b^2x^3y^2z^3) = 4\,b^4x^4y^3z^4$

[3] $(-8\,bxy^3z^3)\cdot(8\,b^2x^3y^3z) = -64\,b^3x^4y^6z^4$

[4] $(9\,b^3x^2y^3z^2)\cdot(9\,bx^3y^3z^3) = 81\,b^4x^5y^6z^5$

[5] $(-12\,b^3x^3y^2z^3)\cdot(12\,bxy^2z^2) = -144\,b^4x^4y^4z^5$

[6] $(-250\,bxy^3z)\cdot(-5\,b^2x^3y^3z^2) = 1250\,b^3x^4y^6z^3$

[7] $(-18\,bxy^2z^2)\cdot(-864\,b^3x^3yz^2) = 15552\,b^4x^4y^3z^4$

[8] $(-196\,b^3xy^2z^2)\cdot(-1029\,b^3x^2yz^2) = 201684\,b^6x^3y^3z^4$

[9] $(512\,b^2x^2y^3z)\cdot(-16\,b^2x^2yz) = -8192\,b^4x^4y^4z^2$

[10] $(-36\,b^2x^3yz^2)\cdot(9\,b^3x^2y^3z^3) = -324\,b^5x^5y^4z^5$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

[1] $(x)\cdot(-3\,x^2-4\,x) = -3\,x^3-4\,x^2$

[2] $(3\,x)\cdot(-5\,x^2+6\,x) = -15\,x^3+18\,x^2$

[3] $(3\,x^2)\cdot(-5\,x^2+x) = -15\,x^4+3\,x^3$

[4] $(2\,x^2)\cdot(x^2+7\,x) = 2\,x^4+14\,x^3$

[5] $(-2\,x)\cdot(2\,x^2-x) = -4\,x^3+2\,x^2$

[6] $(-2\,x)\cdot(-4\,x^2-5\,x) = 8\,x^3+10\,x^2$

[7] $(2\,x)\cdot(-3\,x^2-3\,x) = -6\,x^3-6\,x^2$

[8] $(2\,x^2)\cdot(-2\,x^2-6\,x) = -4\,x^4-12\,x^3$

[9] $(2\,x)\cdot(-2\,x^2+x) = -4\,x^3+2\,x^2$

[10] $(3\,x)\cdot(-x^2-x) = -3\,x^3-3\,x^2$

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

[1] $(4\,x)\cdot(-x^2-4\,x) = -4\,x^3-16\,x^2$

[2] $(2\,x^2+4\,x)\cdot(9\,x^2) = 18\,x^4+36\,x^3$

[3] $(-4\,x^2)\cdot(3\,x^2) = -12\,x^4$

[4] $(4\,x^2-4\,x)\cdot(4\,x^2) = 16\,x^4-16\,x^3$

[5] $(-2\,x^2+3\,x)\cdot(3\,x^2-x) = -6\,x^4+11\,x^3-3\,x^2$

[6] $(-4\,x^2+3\,x)\cdot(x^2-x) = -4\,x^4+7\,x^3-3\,x^2$

[7] $(x)\cdot(-3\,x^2-2\,x) = -3\,x^3-2\,x^2$

[8] $(8\,x)\cdot(-2\,x^2+3\,x) = -16\,x^3+24\,x^2$

[9] $(0) \cdot (x^2 - 3\,x) = 0$

[10] $(-3\,x^2 - 2\,x) \cdot (4\,x^2) = -12\,x^4 - 8\,x^3$

[11] $(4\,x^2 + x) \cdot (-2\,x^2 + 2\,x) = -8\,x^4 + 6\,x^3 + 2\,x^2$

[12] $(x^2) \cdot (5\,x^2) = 5\,x^4$

[13] $(x) \cdot (-4\,x^2 + 2\,x) = -4\,x^3 + 2\,x^2$

[14] $(4\,x^2 - 2\,x) \cdot (-x^2) = -4\,x^4 + 2\,x^3$

[15] $(-6\,x) \cdot (-3\,x^2 + 2\,x) = 18\,x^3 - 12\,x^2$

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-7\,x^2) \cdot (-4\,x^3 + x) = 28\,x^5 - 7\,x^3$

[2] $(-3\,x^3 + 4\,x) \cdot (-4\,x^2 - x) = 12\,x^5 + 3\,x^4 - 16\,x^3 - 4\,x^2$

[3] $(-4\,x^3 - 4\,x^2) \cdot (-x^3 - x) = 4\,x^6 + 4\,x^5 + 4\,x^4 + 4\,x^3$

[4] $(-2\,x^3) \cdot (6\,x^3 + x^2) = -12\,x^6 - 2\,x^5$

[5] $(5\,x^2) \cdot (3\,x^2 - 2\,x) = 15\,x^4 - 10\,x^3$

[6] $(-3\,x^3 - 4\,x) \cdot (-3\,x^3 + x^2) = 9\,x^6 - 3\,x^5 + 12\,x^4 - 4\,x^3$

[7] $(-3\,x) \cdot (-2\,x) = 6\,x^2$

[8] $(-x^2 + 2\,x) \cdot (4\,x^3 - x^2 + 4\,x) = -4\,x^5 + 9\,x^4 - 6\,x^3 + 8\,x^2$

[9] $(3\,x^3) \cdot (-3\,x^3 - 4\,x^2 - 4\,x) = -9\,x^6 - 12\,x^5 - 12\,x^4$

[10] $(4\,x^2) \cdot (x^2) = 4\,x^4$

[11] $(x^3 - 3\,x) \cdot (x^3 + x^2 + 3\,x) = x^6 + x^5 - 3\,x^3 - 9\,x^2$

[12] $(7\,x^2) \cdot (2\,x^3 - 7\,x) = 14\,x^5 - 49\,x^3$

[13] $(2\,x^3 - 6\,x^2) \cdot (-5\,x^3 + 2\,x) = -10\,x^6 + 30\,x^5 + 4\,x^4 - 12\,x^3$

[14] $(-2\,x^3) \cdot (-6\,x^3 + 2\,x) = 12\,x^6 - 4\,x^4$

[15] $(-4\,x^3 + 3\,x^2) \cdot (2\,x^3 - x^2) = -8\,x^6 + 10\,x^5 - 3\,x^4$

[16] $(-3\,x) \cdot (-3\,x^3 + 4\,x^2) = 9\,x^4 - 12\,x^3$

[17] $(x^3 - 3\,x^2) \cdot (-5\,x^3 + 4\,x^2 - 4\,x) = -5\,x^6 + 19\,x^5 - 16\,x^4 + 12\,x^3$

[18] $(-2\,x^2 - 3\,x) \cdot (-2\,x^3 - 3\,x^2 - x) = 4\,x^5 + 12\,x^4 + 11\,x^3 + 3\,x^2$

[19] $(3\,x^3 - 6\,x^2) \cdot (3\,x^3 - 4\,x^2 + x) = 9\,x^6 - 30\,x^5 + 27\,x^4 - 6\,x^3$

[20] $(-4\,x^2) \cdot (x^3 - 2\,x^2 + 4\,x) = -4\,x^5 + 8\,x^4 - 16\,x^3$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-3\,x^2y^2 + 2\,x^2y) \cdot (3\,x^2y + 2\,xy^2 - 4\,xy) = -9\,x^4y^3 - 6\,x^3y^4 + 6\,x^4y^2 + 16\,x^3y^3 - 8\,x^3y^2$

[2] $(x^2y^2 + 2\,x^2y) \cdot (-3\,x^2y^2 - x^2y) = -3\,x^4y^4 - 7\,x^4y^3 - 2\,x^4y^2$

[3] $(3\,x^2y^2 + x^2y) \cdot (4\,xy^2 + xy) = 12\,x^3y^4 + 7\,x^3y^3 + x^3y^2$

[4] $(3\,x^2y + 2\,xy^2) \cdot (-3\,x^2y + 4\,xy^2) = -9\,x^4y^2 + 6\,x^3y^3 + 8\,x^2y^4$

[5] $(0) \cdot (4\,x^2y - xy^2 - xy) = 0$

[6] $(x^2y + 2\,xy) \cdot (-3\,xy^2 + 4\,xy) = -3\,x^3y^3 + 4\,x^3y^2 - 6\,x^2y^3 + 8\,x^2y^2$

[7] $(x^2y^2 + 4\,xy^2) \cdot (2\,x^2y^2 - 2\,xy^2 - 4\,xy) = 2\,x^4y^4 + 6\,x^3y^4 - 4\,x^3y^3 - 8\,x^2y^4 - 16\,x^2y^3$