1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

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

[10] $-2\,x^6 - 3\,x^4 - 3\,x^3 + (-4\,x^6 + 2\,x^5 - 2\,x^4) + (-7\,x^3 + 2\,x) = -6\,x^6 + 2\,x^5 - 5\,x^4 - 10\,x^3 + 2\,x$

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $6\,x^2y + 16\,xy^2 - 2\,xy + -2\,x^2y^2 - 6\,x^2y + -4\,x^2y^2 + 16\,xy^2 = -6\,x^2y^2 + 32\,xy^2 - 2\,xy$

[4] $6\,x^2y^2 + 6\,x^2y - 3\,xy + -3\,x^2y + 27\,xy + 18\,x^2y - 12\,xy = 6\,x^2y^2 + 21\,x^2y + 12\,xy$

[5] $32\,x^2y + 12\,xy + -12\,x^2y^2 - 12\,xy^2 - 48\,xy + -16\,x^2y + 56\,xy^2 = -12\,x^2y^2 + 16\,x^2y + 44\,xy^2 - 36\,xy$

[6] $175\,x^2y - 15\,xy + -100\,x^2y^2 + 5\,x^2y - 50\,xy^2 + (-100\,x^2y^2) = -200\,x^2y^2 + 180\,x^2y - 50\,xy^2 - 15\,xy$

[7] $30\,x^2y^2 + -252\,x^2y + 18\,xy + 48\,x^2y^2 - 144\,xy^2 = 78\,x^2y^2 - 252\,x^2y - 144\,xy^2 + 18\,xy$

[8] $140\,x^2y - 14\,xy + -98\,x^2y^2 - 21\,xy^2 + 28\,xy + -196\,x^2y^2 - 28\,x^2y + 147\,xy^2 = -294\,x^2y^2 + 112\,x^2y + 126\,xy^2 + 14\,xy$

[9] $24\,xy^2 - 128\,xy + -192\,x^2y^2 - 8\,x^2y + 16\,xy + -128\,x^2y^2 - 16\,xy^2 - 128\,xy = -320\,x^2y^2 - 8\,x^2y + 8\,xy^2 - 240\,xy$

[10] $243\,x^2y - 81\,xy^2 + -324\,x^2y - 81\,xy^2 + (-351\,x^2y^2 - 81\,xy^2) = -351\,x^2y^2 - 81\,x^2y - 243\,xy^2$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $-6\,x^2y^2 - 6\,x^2y + 12\,x^2y^2 - 12\,xy^2 - 6\,xy - (16\,x^2y^2 - 24\,xy) = -10\,x^2y^2 - 6\,x^2y - 12\,xy^2 + 18\,xy$

[4] $27\,x^2y^2 - 6\,xy^2 + 12\,xy - (6\,x^2y^2 + 3\,xy^2) + (24\,x^2y - 9\,xy^2) = 21\,x^2y^2 + 24\,x^2y - 18\,xy^2 + 12\,xy$

[5] $52\,x^2y + 16\,xy + 32\,x^2y^2 - 16\,x^2y - 48\,xy^2 - (-32\,x^2y) = 32\,x^2y^2 + 68\,x^2y - 48\,xy^2 + 16\,xy$

[6] $10\,xy + -50\,x^2y - 5\,xy^2 - 25\,xy - (175\,xy^2 - 25\,xy) = -50\,x^2y - 180\,xy^2 + 10\,xy$

[7] $6\,x^2y^2 + 12\,x^2y - 24\,xy - (-132\,x^2y^2 - 6\,xy) + (36\,x^2y^2 + 12\,xy^2 - 36\,xy) = 174\,x^2y^2 + 12\,x^2y + 12\,xy^2 - 54\,xy$

[8] $28\,x^2y + 189\,xy + 98\,x^2y^2 - 7\,xy^2 - (-147\,x^2y^2 + 147\,x^2y + 49\,xy^2) = 245\,x^2y^2 - 119\,x^2y - 56\,xy^2 + 189\,xy$

[9] $8\,x^2y^2 - 160\,xy^2 + -256\,x^2y^2 - 192\,x^2y + 16\,xy^2 - (-16\,x^2y^2 - 128\,x^2y + 24\,xy^2) = -232\,x^2y^2 - 64\,x^2y - 168\,xy^2$

[10] $9\,x^2y^2 + 45\,xy - (18\,xy^2 - 9\,xy) + (81\,x^2y^2 + 36\,x^2y) = 90\,x^2y^2 + 36\,x^2y - 18\,xy^2 + 54\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-8\,b^2x^2yz^3) \cdot (-16\,bx^2y^2z^2) = 128\,b^3x^4y^3z^5$

[4] $(-27\,bxy^2z) \cdot (12\,b^3xyz^2) = -324\,b^4x^2y^3z^3$

[5] $(-4\,b^3x^2y^2z) \cdot (12\,b^3x^3y^2z) = -48\,b^6x^5y^4z^2$

[6] $(500\,bx^3yz^3) \cdot (500\,b^3xy^3z^3) = 250000\,b^4x^4y^4z^6$

[7] $(-864\,bxy^3z^2) \cdot (648\,bxyz^2) = -559872\,b^2x^2y^4z^4$

[8] $(-49\,b^3xyz) \cdot (21\,b^2xy^2z) = -1029\,b^5x^2y^3z^2$

[9] $(-32\,b^3xy^2z^2) \cdot (-1536\,bx^3yz) = 49152\,b^4x^4y^3z^3$

[10] $(-324\,b^2xyz^3) \cdot (27\,bxyz) = -8748\,b^3x^2y^2z^4$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

[1] $(3\,x) \cdot (x^2 - 2\,x) = 3\,x^3 - 6\,x^2$

[2] $(4\,x) \cdot (3\,x^2 - 12\,x) = 12\,x^3 - 48\,x^2$

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

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

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

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

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

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

[9] $(4\,x^2) \cdot (x^2 - 5\,x) = 4\,x^4 - 20\,x^3$

[10] $(2\,x) \cdot (3\,x^2 + 9\,x) = 6\,x^3 + 18\,x^2$

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

[7] $(-3\,x)\cdot(-8\,x^2+2\,x)=24\,x^3-6\,x^2$

[8] $(7\,x)\cdot(-2\,x)=-14\,x^2$

[9] $(-5\,x^2)\cdot(4\,x^2+6\,x)=-20\,x^4-30\,x^3$

[10] $(3\,x^2+x)\cdot(4\,x^2+4\,x)=12\,x^4+16\,x^3+4\,x^2$

[11] $(3\,x^2+x)\cdot(0)=0$

[12] $(-2\,x^2-2\,x)\cdot(-2\,x^2-5\,x)=4\,x^4+14\,x^3+10\,x^2$

[13] $(-3\,x^2+x)\cdot(-2\,x^2-6\,x)=6\,x^4+16\,x^3-6\,x^2$

[14] $(-4\,x)\cdot(4\,x^2)=-16\,x^3$

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-4\,x^3+x^2)\cdot(-4\,x^3-2\,x^2-2\,x)=16\,x^6+4\,x^5+6\,x^4-2\,x^3$

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

[3] $(-4\,x^3-4\,x)\cdot(-8\,x^3)=32\,x^6+32\,x^4$

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

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

[6] $(5\,x^2)\cdot(-2\,x^3+4\,x^2-2\,x)=-10\,x^5+20\,x^4-10\,x^3$

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

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

[9] $(2\,x^3-3\,x^2)\cdot(7\,x^3+3\,x^2-2\,x)=14\,x^6-15\,x^5-13\,x^4+6\,x^3$

[10] $(4\,x^3-2\,x^2+4\,x)\cdot(3\,x^3-2\,x^2+2\,x)=12\,x^6-14\,x^5+24\,x^4-12\,x^3+8\,x^2$

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

[12] $(4\,x)\cdot(-4\,x^3-5\,x^2+2\,x)=-16\,x^4-20\,x^3+8\,x^2$

[13] $(4\,x^2-4\,x)\cdot(-3\,x^2-2\,x)=-12\,x^4+4\,x^3+8\,x^2$

[14] $(-6\,x^3)\cdot(-x^3+4\,x^2-x)=6\,x^6-24\,x^5+6\,x^4$

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

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

[17] $(-2\,x^2)\cdot(5\,x)=-10\,x^3$

[18] $(-3\,x^3-3\,x^2)\cdot(2\,x)=-6\,x^4-6\,x^3$

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

[20] $(4\,x^3+3\,x^2)\cdot(4\,x^3+3\,x)=16\,x^6+12\,x^5+12\,x^4+9\,x^3$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

[3] $(x^2y^2-4\,xy^2)\cdot(2\,x^2y^2+3\,x^2y-xy)=2\,x^4y^4+3\,x^4y^3-8\,x^3y^4-13\,x^3y^3+4\,x^2y^3$

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

[5] $(-3\,x^2y^2+4\,xy)\cdot(4\,x^2y^2-2\,xy)=-12\,x^4y^4+22\,x^3y^3-8\,x^2y^2$

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

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