1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

[1] $3\,x^6 - x^4 - 2\,x^2 + -x^5 + x^4 + x^2 + 7\,x^3 = 3\,x^6 - x^5 + 7\,x^3 - x^2$

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $2\,x^2y^2 + 16\,xy + -4\,x^2y^2 + 8\,xy^2 - 6\,xy + (-2\,x^2y^2 - 8\,x^2y + 6\,xy^2) = -4\,x^2y^2 - 8\,x^2y + 14\,xy^2 + 10\,xy$

[4] $6\,x^2y + 12\,xy^2 + 18\,xy + -9\,x^2y^2 - 9\,xy^2 + 24\,x^2y + 27\,xy^2 = -9\,x^2y^2 + 30\,x^2y + 30\,xy^2 + 18\,xy$

[5] $16\,x^2y^2 + 12\,xy + -28\,xy^2 + 12\,xy + (-48\,x^2y + 8\,xy^2 - 4\,xy) = 16\,x^2y^2 - 48\,x^2y - 20\,xy^2 + 20\,xy$

[6] $25\,x^2y^2 + 5\,x^2y - 20\,xy^2 + -50\,x^2y + 40\,xy + (-5\,x^2y^2 + 20\,xy) = 20\,x^2y^2 - 45\,x^2y - 20\,xy^2 + 60\,xy$

[7] $6\,x^2y - 36\,xy^2 - 6\,xy + -18\,x^2y^2 + 252\,xy^2 + 18\,x^2y^2 - 30\,x^2y = -24\,x^2y + 216\,xy^2 - 6\,xy$

[8] $7\,x^2y - 105\,xy^2 + 196\,x^2y + 7\,xy^2 + 28\,xy + -14\,x^2y^2 - 245\,x^2y = -14\,x^2y^2 - 42\,x^2y - 98\,xy^2 + 28\,xy$

[9] $8\,x^2y^2 - 192\,x^2y + 32\,xy^2 + -64\,x^2y^2 + 48\,x^2y + -240\,x^2y^2 - 24\,x^2y = -296\,x^2y^2 - 168\,x^2y + 32\,xy^2$

[10] $162\,x^2y - 18\,xy^2 - 243\,xy + -18\,x^2y^2 + 36\,xy^2 - 9\,xy + 243\,x^2y^2 + 162\,x^2y + 27\,xy^2 = 225\,x^2y^2 + 324\,x^2y + 45\,xy^2 - 252\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $10\,x^2y^2 + 16\,x^2y + 12\,xy - (-4\,x^2y^2 + 8\,x^2y + 4\,xy) = 14\,x^2y^2 + 8\,x^2y + 8\,xy$

[4] $-27\,xy^2 - (45\,x^2y^2 + 12\,x^2y) + (18\,x^2y^2) = -27\,x^2y^2 - 12\,x^2y - 27\,xy^2$

[5] $-4\,x^2y - 64\,xy^2 + 4\,x^2y^2 - 16\,xy^2 + 4\,xy - (16\,x^2y^2 - 32\,xy^2 + 16\,xy) = -12\,x^2y^2 - 4\,x^2y - 48\,xy^2 - 12\,xy$

[6] $10\,x^2y^2 - 100\,x^2y + 15\,xy^2 + -5\,x^2y^2 + 50\,xy^2 - 50\,xy - (20\,x^2y^2 + 25\,xy^2) = -15\,x^2y^2 - 100\,x^2y + 40\,xy^2 - 50\,xy$

[7] $-108\,x^2y - 18\,xy^2 - (-36\,x^2y^2 - 30\,x^2y) + (-18\,x^2y + 108\,xy^2 - 144\,xy) = 36\,x^2y^2 - 96\,x^2y + 90\,xy^2 - 144\,xy$

[8] $-14\,x^2y^2 - 28\,x^2y + 21\,x^2y^2 + 35\,xy^2 - (14\,x^2y - 42\,xy^2) = 7\,x^2y^2 - 42\,x^2y + 77\,xy^2$

[9] $-384\,x^2y^2 - 192\,xy + -48\,x^2y^2 - (16\,x^2y^2 + 64\,xy^2) = -448\,x^2y^2 - 64\,xy^2 - 192\,xy$

[10] $-9\,x^2y + 18\,xy^2 - 324\,xy - (-81\,x^2y^2 - 324\,x^2y + 162\,xy) + (-18\,xy^2 + 162\,xy) = 81\,x^2y^2 + 315\,x^2y - 324\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

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

[4] $(-54\,bxyz) \cdot (-108\,b^2xy^3z) = 5832\,b^3x^2y^4z^2$

[5] $(256\,b^3x^3y^2z^2) \cdot (16\,b^3xy^3z^3) = 4096\,b^6x^4y^5z^5$

[6] $(50\,b^3x^3yz^3) \cdot (-50\,b^3x^3y^3z^3) = -2500\,b^6x^6y^4z^6$

[7] $(72\,bxy^2z^2) \cdot (-648\,bxy^2z^2) = -46656\,b^2x^2y^4z^4$

[8] $(147\,b^2x^2yz^3) \cdot (28\,b^2x^3y^3z^3) = 4116\,b^4x^5y^4z^6$

[9] $(8\,b^2x^3yz) \cdot (16\,b^3x^3y^2z) = 128\,b^5x^6y^3z^2$

[10] $(-9\,bx^3y^3z) \cdot (2187\,b^3x^3y^3z^2) = -19683\,b^4x^6y^6z^3$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

[1] $(3\,x) \cdot (-5\,x^2 - 2\,x) = -15\,x^3 - 6\,x^2$

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

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

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

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

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

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

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-3\,x) \cdot (-9\,x) = 27\,x^2$

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

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

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

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

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

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

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

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

[10] $(8\,x^2)\cdot(4\,x^2+2\,x)=32\,x^4+16\,x^3$

[11] $(4\,x^2+4\,x)\cdot(6\,x^2-2\,x)=24\,x^4+16\,x^3-8\,x^2$

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

[13] $(-3\,x^2-4\,x)\cdot(-2\,x^2)=6\,x^4+8\,x^3$

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

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(3\,x^3-4\,x^2-2\,x)\cdot(x^3+3\,x)=3\,x^6-4\,x^5+7\,x^4-12\,x^3-6\,x^2$

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

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

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

[5] $(3\,x)\cdot(0)=0$

[6] $(0)\cdot(-8\,x^3-2\,x^2)=0$

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

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

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

[10] $(-8\,x^2)\cdot(7\,x^2)=-56\,x^4$

[11] $(4\,x^3-4\,x)\cdot(3\,x^3-4\,x^2+4\,x)=12\,x^6-16\,x^5+4\,x^4+16\,x^3-16\,x^2$

[12] $(3\,x^3-3\,x^2)\cdot(x^3-4\,x^2+4\,x)=3\,x^6-15\,x^5+24\,x^4-12\,x^3$

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

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

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

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

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

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

[19] $(-2\,x^2-2\,x)\cdot(4\,x^3)=-8\,x^5-8\,x^4$

[20] $(3\,x^2-2\,x)\cdot(-x^3+7\,x^2)=-3\,x^5+23\,x^4-14\,x^3$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

[5] $(-x^2y+4\,xy^2)\cdot(-2\,x^2y^2-4\,x^2y+xy^2)=2\,x^4y^3-8\,x^3y^4+4\,x^4y^2-17\,x^3y^3+4\,x^2y^4$

[6] $(-2\,xy^2 + 4\,xy) \cdot (-4\,x^2y^2 - x^2y) = 8\,x^3y^4 - 14\,x^3y^3 - 4\,x^3y^2$

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