1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

[2] $2\,x^2y^2+2\,x^2y+3\,xy^2+7\,x^2y-xy^2+2\,x^2y-4\,xy^2=2\,x^2y^2+11\,x^2y-2\,xy^2$

[3] $8\,x^2y-4\,xy^2-12\,xy+-12\,x^2y^2-16\,x^2y-6\,xy^2+-16\,x^2y^2-8\,x^2y-2\,xy=-28\,x^2y^2-16\,x^2y-10\,xy^2-14\,xy$

[4] $3\,x^2y^2+39\,x^2y+27\,xy^2+21\,x^2y^2-3\,x^2y=24\,x^2y^2+36\,x^2y+27\,xy^2$

[5] $16\,x^2y^2-32\,x^2y+32\,xy^2+8\,x^2y^2+4\,xy^2+-8\,x^2y-48\,xy=24\,x^2y^2-40\,x^2y+36\,xy^2-48\,xy$

[6] $15\,x^2y^2+50\,x^2y-10\,xy+-100\,x^2y^2+20\,x^2y-5\,xy^2+-65\,x^2y+25\,xy^2=-85\,x^2y^2+5\,x^2y+20\,xy^2-10\,xy$

[7] $144\,x^2y^2-24\,xy^2+-84\,x^2y+24\,xy^2+-60\,x^2y^2-144\,xy^2=84\,x^2y^2-84\,x^2y-144\,xy^2$

[8] $28\,x^2y^2-14\,xy^2-196\,xy+-196\,xy^2+98\,xy+35\,x^2y^2-196\,x^2y=63\,x^2y^2-196\,x^2y-210\,xy^2-98\,xy$

[9] $-16\,xy^2+(-24\,x^2y-64\,xy^2+256\,xy)+(-248\,x^2y^2-128\,xy)=-248\,x^2y^2-24\,x^2y-80\,xy^2+128\,xy$

[10] $27\,x^2y-9\,xy^2+36\,xy+-36\,x^2y^2+567\,xy+(-162\,x^2y^2-243\,x^2y+18\,xy^2)=-198\,x^2y^2-216\,x^2y+9\,xy^2+603\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $-6\,x^2y+4\,xy^2+-6\,x^2y^2-4\,xy^2-(-24\,x^2y^2+2\,x^2y)=18\,x^2y^2-8\,x^2y$

[4] $-36\,x^2y^2-3\,x^2y+12\,xy^2-(-18\,x^2y^2+6\,x^2y-27\,xy^2)+(27\,x^2y-3\,xy)=-18\,x^2y^2+18\,x^2y+39\,xy^2-3\,xy$

[5] $-28\,xy^2-16\,xy+-16\,x^2y+32\,xy-(-8\,x^2y^2+48\,xy^2)=8\,x^2y^2-16\,x^2y-76\,xy^2+16\,xy$

[6] $-25\,x^2y^2 - 10\,x^2y - 20\,xy + 25\,x^2y^2 + 10\,xy - (5\,x^2y^2 + 25\,x^2y - 5\,xy^2) = -5\,x^2y^2 - 35\,x^2y + 5\,xy^2 - 10\,xy$

[7] $-144\,xy^2 + 78\,xy - (108\,x^2y^2) + (6\,x^2y) = -108\,x^2y^2 + 6\,x^2y - 144\,xy^2 + 78\,xy$

[8] $28\,xy^2 - 196\,xy + -49\,xy^2 - (98\,x^2y^2 + 21\,xy^2 - 28\,xy) = -98\,x^2y^2 - 42\,xy^2 - 168\,xy$

[9] $-128\,x^2y + 8\,xy + -160\,x^2y + 32\,xy - (8\,x^2y^2 + 256\,xy^2) = -8\,x^2y^2 - 288\,x^2y - 256\,xy^2 + 40\,xy$

[10] $270\,x^2y^2 + 162\,xy - (324\,x^2y^2 - 351\,xy^2) + (-81\,x^2y^2 + 9\,xy^2 - 324\,xy) = -135\,x^2y^2 + 360\,xy^2 - 162\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-8\,b^2xy^3z) \cdot (32\,b^2xy^3z^3) = -256\,b^4x^2y^6z^4$

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

[5] $(32\,b^2x^2yz^3) \cdot (4\,b^2xyz^2) = 128\,b^4x^3y^2z^5$

[6] $(-75\,b^3x^2y^3z^2) \cdot (15\,bx^2yz^3) = -1125\,b^4x^4y^4z^5$

[7] $(-648\,bx^2y^2z^2) \cdot (-144\,b^2x^3y^3z^2) = 93312\,b^3x^5y^5z^4$

[8] $(98\,b^2x^3yz^3) \cdot (-14\,b^2x^2y^2z^2) = -1372\,b^4x^5y^3z^5$

[9] $(-24\,bxy^2z) \cdot (2048\,bxy^2z^3) = -49152\,b^2x^2y^4z^4$

[10] $(81\,b^3xyz) \cdot (-162\,b^3x^2y^3z) = -13122\,b^6x^3y^4z^2$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-2\,x) \cdot (5\,x^2 - 5\,x) = -10\,x^3 + 10\,x^2$

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

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

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

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

[6] $(-3\,x) \cdot (-3\,x^2 + 8\,x) = 9\,x^3 - 24\,x^2$

[7] $(-3\,x) \cdot (10\,x^2) = -30\,x^3$

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

[7] $(-2\,x^2 - 4\,x) \cdot (7\,x^2 + x) = -14\,x^4 - 30\,x^3 - 4\,x^2$

[8] $(2\,x^2)\cdot(10\,x^2) = 20\,x^4$

[9] $(2\,x^2 - x)\cdot(-4\,x^2 + 5\,x) = -8\,x^4 + 14\,x^3 - 5\,x^2$

[10] $(3\,x^2 + 4\,x)\cdot(5\,x^2 + 4\,x) = 15\,x^4 + 32\,x^3 + 16\,x^2$

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

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

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

[14] $(-3\,x^2 - 3\,x)\cdot(2\,x^2 - 7\,x) = -6\,x^4 + 15\,x^3 + 21\,x^2$

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

[6] $(-4\,x^3 - 4\,x)\cdot(0) = 0$

[7] $(-4\,x^2 + 4\,x)\cdot(x^3 + 3\,x^2 - x) = -4\,x^5 - 8\,x^4 + 16\,x^3 - 4\,x^2$

[8] $(4\,x^2 - 2\,x)\cdot(0) = 0$

[9] $(0)\cdot(-4\,x^3 - 4\,x^2 + x) = 0$

[10] $(-2\,x^3 - 2\,x^2)\cdot(-3\,x^2 + 7\,x) = 6\,x^5 - 8\,x^4 - 14\,x^3$

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

[12] $(3\,x^3 - 3\,x)\cdot(-6\,x^3 - 3\,x^2 + x) = -18\,x^6 - 9\,x^5 + 21\,x^4 + 9\,x^3 - 3\,x^2$

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

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

[15] $(-4\,x)\cdot(-4\,x^3 + 4\,x^2) = 16\,x^4 - 16\,x^3$

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

[17] $(-2\,x^3 + 4\,x^2)\cdot(x^3 - 3\,x^2 - 4\,x) = -2\,x^6 + 10\,x^5 - 4\,x^4 - 16\,x^3$

[18] $(6\,x^2)\cdot(7\,x^3 + 4\,x^2 + 3\,x) = 42\,x^5 + 24\,x^4 + 18\,x^3$

[19] $(-8\,x^3 - 3\,x^2)\cdot(-4\,x^3 - 2\,x^2 - 2\,x) = 32\,x^6 + 28\,x^5 + 22\,x^4 + 6\,x^3$

[20] $(-6\,x^2)\cdot(-6\,x^2 - x) = 36\,x^4 + 6\,x^3$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

[1] $(3\,x^2y^2 - 2\,xy)\cdot(-4\,x^2y - xy^2 + xy) = -12\,x^4y^3 - 3\,x^3y^4 + 3\,x^3y^3 + 8\,x^3y^2 + 2\,x^2y^3 - 2\,x^2y^2$

[2] $(x^2y^2)\cdot(x^2y) = x^4y^3$

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

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

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

[6] $(-x^2y - 4\,xy)\cdot(-3\,x^2y^2 - 5\,xy) = 3\,x^4y^3 + 12\,x^3y^3 + 5\,x^3y^2 + 20\,x^2y^2$

[7] $(4\,x^2y^2 - xy^2)\cdot(-x^2y^2 + 6\,x^2y) = -4\,x^4y^4 + 24\,x^4y^3 + x^3y^4 - 6\,x^3y^3$