1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

[2] $4\,x^2y^2-7\,x^2y+-4\,x^2y^2-x^2y-4\,xy+4\,x^2y^2-4\,xy=4\,x^2y^2-8\,x^2y-8\,xy$

[3] $2\,xy^2+-8\,x^2y^2-12\,x^2y+12\,xy^2+24\,xy^2-4\,xy=-8\,x^2y^2-12\,x^2y+38\,xy^2-4\,xy$

[4] $-18\,x^2y-27\,xy+(-9\,x^2y^2-18\,xy)+(-6\,x^2y^2+9\,xy)=-15\,x^2y^2-18\,x^2y-36\,xy$

[5] $8\,xy^2-4\,xy+16\,x^2y^2+60\,x^2y+-4\,x^2y-48\,xy^2-32\,xy=16\,x^2y^2+56\,x^2y-40\,xy^2-36\,xy$

[6] $5\,x^2y^2+100\,x^2y-20\,xy^2+-5\,x^2y^2+35\,xy^2+10\,x^2y+15\,xy^2-100\,xy=110\,x^2y+30\,xy^2-100\,xy$

[7] $12\,x^2y-90\,xy+-12\,x^2y+36\,xy^2+36\,xy+-24\,x^2y^2-6\,xy^2+108\,xy=-24\,x^2y^2+30\,xy^2+54\,xy$

[8] $98\,x^2y-14\,xy^2+7\,xy+196\,x^2y^2+147\,x^2y-196\,xy+-147\,x^2y^2-7\,xy^2-196\,xy=49\,x^2y^2+245\,x^2y-21\,xy^2-385\,xy$

[9] $264\,x^2y^2-32\,xy+-224\,xy^2-32\,xy+192\,x^2y+64\,xy^2-256\,xy=264\,x^2y^2+192\,x^2y-160\,xy^2-320\,xy$

[10] $-162\,x^2y^2-81\,xy^2-162\,xy+(-45\,xy^2-9\,xy)+(-324\,x^2y^2+18\,xy^2-27\,xy)=-486\,x^2y^2-108\,xy^2-198\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $16\,x^2y^2+4\,xy^2+8\,xy+8\,x^2y^2+8\,x^2y+2\,xy^2-(-2\,x^2y^2+6\,xy)=26\,x^2y^2+8\,x^2y+6\,xy^2+2\,xy$

[4] $-9\,x^2y^2+24\,x^2y-(-3\,x^2y+3\,xy^2-3\,xy)+(18\,x^2y^2+6\,x^2y-9\,xy^2)=9\,x^2y^2+33\,x^2y-12\,xy^2+3\,xy$

[5] $24\,x^2y^2 + 16\,x^2y + 48\,x^2y^2 - 16\,x^2y - 64\,xy - (-8\,x^2y^2 - 16\,x^2y - 32\,xy) = 80\,x^2y^2 + 16\,x^2y - 32\,xy$

[6] $-30\,x^2y + 50\,xy^2 + 75\,xy^2 + 40\,xy - (-115\,x^2y) = 85\,x^2y + 125\,xy^2 + 40\,xy$

[7] $24\,x^2y - 24\,xy - (6\,x^2y^2 + 108\,xy^2 - 24\,xy) + (-48\,x^2y^2) = -54\,x^2y^2 + 24\,x^2y - 108\,xy^2$

[8] $147\,x^2y^2 - 28\,xy^2 - 196\,xy + 21\,xy - (98\,x^2y^2 + 28\,x^2y - 98\,xy) = 49\,x^2y^2 - 28\,x^2y - 28\,xy^2 - 77\,xy$

[9] $32\,x^2y^2 - 256\,xy^2 + 256\,xy + -256\,x^2y - 64\,xy^2 - (184\,x^2y^2) = -152\,x^2y^2 - 256\,x^2y - 320\,xy^2 + 256\,xy$

[10] $-81\,x^2y - 234\,xy - (81\,x^2y^2 - 63\,xy^2) + (162\,x^2y - 135\,xy) = -81\,x^2y^2 + 81\,x^2y + 63\,xy^2 - 369\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-4\,b^3x^3y^3z^3) \cdot (4\,b^3xyz) = -16\,b^6x^4y^4z^4$

[4] $(3\,b^3x^3yz) \cdot (-9\,bxyz) = -27\,b^4x^4y^2z^2$

[5] $(4\,b^3x^3yz^3) \cdot (192\,b^2xy^2z) = 768\,b^5x^4y^3z^4$

[6] $(-125\,b^2x^2yz^3) \cdot (-500\,b^3x^3y^3z^3) = 62500\,b^5x^5y^4z^6$

[7] $(36\,b^3x^2yz^2) \cdot (-72\,bxyz^2) = -2592\,b^4x^3y^2z^4$

[8] $(28\,b^3xyz^2) \cdot (7\,b^2x^3yz^3) = 196\,b^5x^4y^2z^5$

[9] $(1024\,bx^3yz^3) \cdot (-24\,b^3xyz^3) = -24576\,b^4x^4y^2z^6$

[10] $(729\,b^3xy^2z^2) \cdot (18\,bx^3y^2z^3) = 13122\,b^4x^4y^4z^5$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

[1] $(3\,x) \cdot (-7\,x) = -21\,x^2$

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

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

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

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

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

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

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

[6] $(-3\,x^2-2\,x)\cdot(x^2)=-3\,x^4-2\,x^3$
[7] $(-x^2+x)\cdot(-x^2+6\,x)=x^4-7\,x^3+6\,x^2$
[8] $(-4\,x^2+3\,x)\cdot(-2\,x)=8\,x^3-6\,x^2$
[9] $(-5\,x)\cdot(-2\,x^2)=10\,x^3$
[10] $(3\,x^2)\cdot(x^2-x)=3\,x^4-3\,x^3$
[11] $(-x^2+x)\cdot(-3\,x^2+3\,x)=3\,x^4-6\,x^3+3\,x^2$
[12] $(-2\,x^2-3\,x)\cdot(2\,x^2+6\,x)=-4\,x^4-18\,x^3-18\,x^2$
[13] $(0)\cdot(3\,x)=0$
[14] $(2\,x)\cdot(-2\,x^2-3\,x)=-4\,x^3-6\,x^2$
[15] $(2\,x^2-3\,x)\cdot(4\,x)=8\,x^3-12\,x^2$

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-4\,x^2-6\,x)\cdot(2\,x^3-x)=-8\,x^5-12\,x^4+4\,x^3+6\,x^2$
[2] $(-3\,x^2-4\,x)\cdot(-x^3+3\,x^2+x)=3\,x^5-5\,x^4-15\,x^3-4\,x^2$
[3] $(4\,x^3-3\,x)\cdot(-3\,x^3-2\,x^2)=-12\,x^6-8\,x^5+9\,x^4+6\,x^3$
[4] $(2\,x^3+x^2)\cdot(2\,x^3)=4\,x^6+2\,x^5$
[5] $(-x^2+2\,x)\cdot(x^3-2\,x^2+x)=-x^5+4\,x^4-5\,x^3+2\,x^2$
[6] $(4\,x)\cdot(-x^3+x^2+4\,x)=-4\,x^4+4\,x^3+16\,x^2$
[7] $(-2\,x^2+3\,x)\cdot(3\,x^3-7\,x)=-6\,x^5+9\,x^4+14\,x^3-21\,x^2$
[8] $(7\,x^2)\cdot(6\,x^3+4\,x^2-3\,x)=42\,x^5+28\,x^4-21\,x^3$
[9] $(3\,x^2-4\,x)\cdot(-2\,x^2+8\,x)=-6\,x^4+32\,x^3-32\,x^2$
[10] $(-3\,x)\cdot(5\,x^3-4\,x)=-15\,x^4+12\,x^2$
[11] $(-4\,x^2+x)\cdot(-3\,x^3-2\,x^2-x)=12\,x^5+5\,x^4+2\,x^3-x^2$
[12] $(x^2+x)\cdot(6\,x^3+2\,x^2-4\,x)=6\,x^5+8\,x^4-2\,x^3-4\,x^2$
[13] $(-4\,x^3+5\,x)\cdot(6\,x^3-x^2)=-24\,x^6+4\,x^5+30\,x^4-5\,x^3$
[14] $(-3\,x^3-3\,x^2)\cdot(-4\,x^3-3\,x^2)=12\,x^6+21\,x^5+9\,x^4$
[15] $(-4\,x^3+3\,x)\cdot(x^3+6\,x^2+x)=-4\,x^6-24\,x^5-x^4+18\,x^3+3\,x^2$
[16] $(-6\,x^3)\cdot(-3\,x^2)=18\,x^5$
[17] $(2\,x^3+x^2)\cdot(3\,x^3+11\,x)=6\,x^6+3\,x^5+22\,x^4+11\,x^3$
[18] $(-x^2+3\,x)\cdot(-2\,x^2+4\,x)=2\,x^4-10\,x^3+12\,x^2$
[19] $(-3\,x^3-x^2)\cdot(x^3)=-3\,x^6-x^5$
[20] $(3\,x^3-2\,x)\cdot(4\,x^3+4\,x^2-x)=12\,x^6+12\,x^5-11\,x^4-8\,x^3+2\,x^2$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

[1] $(4\,xy)\cdot(4\,xy)=16\,x^2y^2$
[2] $(6\,xy)\cdot(-3\,x^2y-2\,xy)=-18\,x^3y^2-12\,x^2y^2$
[3] $(x^2y^2-2\,xy)\cdot(-6\,x^2y^2-4\,xy)=-6\,x^4y^4+8\,x^3y^3+8\,x^2y^2$
[4] $(4\,x^2y+2\,xy)\cdot(-2\,x^2y+2\,xy^2+4\,xy)=-8\,x^4y^2+8\,x^3y^3+12\,x^3y^2+4\,x^2y^3+8\,x^2y^2$
[5] $(x^2y^2-x^2y)\cdot(2\,x^2y^2-4\,xy)=2\,x^4y^4-2\,x^4y^3-4\,x^3y^3+4\,x^3y^2$
[6] $(2\,xy^2-4\,xy)\cdot(-x^2y^2-3\,xy^2-2\,xy)=-2\,x^3y^4+4\,x^3y^3-6\,x^2y^4+8\,x^2y^3+8\,x^2y^2$
[7] $(4\,x^2y+2\,xy)\cdot(2\,xy^2-4\,xy)=8\,x^3y^3-16\,x^3y^2+4\,x^2y^3-8\,x^2y^2$