1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

[3] $4\,x^4-6\,x^3+2\,x^6-7\,x^2+-2\,x^3-4\,x^2+x=2\,x^6+4\,x^4-8\,x^3-11\,x^2+x$

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

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

[6] $2\,x^5-6\,x^4+2\,x^6-2\,x^2+0=2\,x^6+2\,x^5-6\,x^4-2\,x^2$

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

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

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

[10] $2\,x^6+2\,x^3+2\,x+-x^4-4\,x^2-x+-x^6-8\,x=x^6-x^4+2\,x^3-4\,x^2-7\,x$

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $8\,x^2y^2-4\,x^2y-8\,xy+-12\,x^2y^2-16\,x^2y+4\,xy^2+-6\,x^2y+4\,xy=-4\,x^2y^2-26\,x^2y+4\,xy^2-4\,xy$

[4] $6\,x^2y^2-36\,xy+6\,x^2y^2+9\,x^2y+6\,xy^2+36\,x^2y^2-9\,x^2y+27\,xy^2=48\,x^2y^2+33\,xy^2-36\,xy$

[5] $16\,xy+-16\,x^2y^2+16\,x^2y-8\,xy+-48\,x^2y^2+8\,xy^2-16\,xy=-64\,x^2y^2+16\,x^2y+8\,xy^2-8\,xy$

[6] $15\,x^2y^2-50\,xy^2+-25\,x^2y^2+5\,xy^2-25\,xy+-5\,x^2y-20\,xy=-10\,x^2y^2-5\,x^2y-45\,xy^2-45\,xy$

[7] $24\,x^2y^2+150\,xy^2+-108\,x^2y^2-36\,x^2y-72\,xy+(-108\,x^2y^2+72\,xy^2)=-192\,x^2y^2-36\,x^2y+222\,xy^2-72\,xy$

[8] $-21\,x^2y+49\,xy+(-98\,x^2y^2+63\,xy^2)+(-49\,x^2y^2-14\,xy^2-147\,xy)=-147\,x^2y^2-21\,x^2y+49\,xy^2-98\,xy$

[9] $16\,x^2y+280\,xy^2+-80\,x^2y^2+192\,x^2y+-128\,x^2y^2+32\,x^2y+192\,xy^2=-208\,x^2y^2+240\,x^2y+472\,xy^2$

[10] $63\,x^2y^2+81\,xy+-81\,x^2y^2-27\,xy^2+-297\,x^2y^2+324\,xy^2=-315\,x^2y^2+297\,xy^2+81\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $-8\,x^2y^2-4\,x^2y+-20\,x^2y^2+16\,x^2y-(-4\,x^2y^2+12\,xy^2-16\,xy)=-24\,x^2y^2+12\,x^2y-12\,xy^2+16\,xy$

[4] $-3\,x^2y^2+12\,xy^2-(9\,xy^2+6\,xy)+(27\,x^2y^2+18\,x^2y-36\,xy)=24\,x^2y^2+18\,x^2y+3\,xy^2-42\,xy$

[5] $8\,x^2y^2 - 56\,xy^2 + -32\,x^2y^2 - 8\,xy - (32\,x^2y + 16\,xy) = -24\,x^2y^2 - 32\,x^2y - 56\,xy^2 - 24\,xy$

[6] $-30\,x^2y^2 - 100\,xy + 10\,x^2y^2 - 20\,xy^2 - (-100\,x^2y + 75\,xy) = -20\,x^2y^2 + 100\,x^2y - 20\,xy^2 - 175\,xy$

[7] $6\,x^2y^2 - 18\,x^2y + 36\,xy^2 - (96\,x^2y - 24\,xy^2) + (18\,x^2y^2 + 6\,x^2y) = 24\,x^2y^2 - 108\,x^2y + 60\,xy^2$

[8] $21\,xy^2 + 210\,xy + 49\,x^2y^2 - 196\,x^2y - 196\,xy^2 - (98\,x^2y) = 49\,x^2y^2 - 294\,x^2y - 175\,xy^2 + 210\,xy$

[9] $224\,x^2y^2 + -256\,x^2y^2 + 24\,x^2y + 128\,xy - (16\,x^2y + 24\,xy^2 + 256\,xy) = -32\,x^2y^2 + 8\,x^2y - 24\,xy^2 - 128\,xy$

[10] $-18\,x^2y + 27\,xy - (-36\,x^2y^2 + 81\,xy^2) + (0) = 36\,x^2y^2 - 18\,x^2y - 81\,xy^2 + 27\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-16\,bx^2y^2z^2) \cdot (32\,b^3xy^2z^3) = -512\,b^4x^3y^4z^5$

[4] $(6\,b^2x^3yz^2) \cdot (27\,b^3xy^3z) = 162\,b^5x^4y^4z^3$

[5] $(192\,bx^2y^2z) \cdot (-48\,b^2x^2y^2z^2) = -9216\,b^3x^4y^4z^3$

[6] $(125\,b^2x^2y^2z) \cdot (-10\,b^3xyz^2) = -1250\,b^5x^3y^3z^3$

[7] $(216\,b^3xy^3z^3) \cdot (72\,b^3xyz) = 15552\,b^6x^2y^4z^4$

[8] $(-196\,bxy^3z^3) \cdot (-98\,b^3x^2yz) = 19208\,b^4x^3y^4z^4$

[9] $(-1024\,b^2xyz^3) \cdot (-128\,b^3x^3y^2z) = 131072\,b^5x^4y^3z^4$

[10] $(-81\,bx^2y^2z^3) \cdot (-729\,b^3x^2y^2z^2) = 59049\,b^4x^4y^4z^5$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

[4] $(3\,x^2) \cdot (5\,x^2 + 6\,x) = 15\,x^4 + 18\,x^3$

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

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

[7] $(3\,x) \cdot (5\,x^2 + 2\,x) = 15\,x^3 + 6\,x^2$

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

[9] $(4\,x^2) \cdot (5\,x^2 - 2\,x) = 20\,x^4 - 8\,x^3$

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

[1] $(3\,x^2 + 4\,x) \cdot (-3\,x^2 + 3\,x) = -9\,x^4 - 3\,x^3 + 12\,x^2$

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

[3] $(0) \cdot (5\,x^2 - 3\,x) = 0$

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

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

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

[7] $(-2\,x^2-2\,x)\cdot(2\,x^2-6\,x)=-4\,x^4+8\,x^3+12\,x^2$

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

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

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

[11] $(4\,x^2-4\,x)\cdot(0)=0$

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

[13] $(-7\,x)\cdot(-x^2+2\,x)=7\,x^3-14\,x^2$

[14] $(-4\,x^2-2\,x)\cdot(4\,x^2+4\,x)=-16\,x^4-24\,x^3-8\,x^2$

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

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

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

[3] $(-6\,x^3)\cdot(2\,x^3+5\,x^2+3\,x)=-12\,x^6-30\,x^5-18\,x^4$

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

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

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

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

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

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

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

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

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

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

[14] $(3\,x^3-4\,x^2)\cdot(-2\,x^3-7\,x)=-6\,x^6+8\,x^5-21\,x^4+28\,x^3$

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

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

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

[18] $(-4\,x^2+3\,x)\cdot(-6\,x^3-4\,x)=24\,x^5-18\,x^4+16\,x^3-12\,x^2$

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

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

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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