1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

[6] $-5\,x^3+3\,x+(-7\,x^2)+(-8\,x^5-2\,x^2)=-8\,x^5-5\,x^3-9\,x^2+3\,x$

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $2\,x^2y-8\,xy+-18\,x^2y^2-8\,xy+-20\,xy^2=-18\,x^2y^2+2\,x^2y-20\,xy^2-16\,xy$

[4] $-12\,x^2y+12\,xy^2+(-6\,x^2y^2+12\,xy^2+12\,xy)+(-12\,xy^2+15\,xy)=-6\,x^2y^2-12\,x^2y+12\,xy^2+27\,xy$

[5] $64\,x^2y^2-12\,x^2y+-4\,x^2y^2+12\,x^2y+64\,x^2y^2+16\,xy^2-48\,xy=124\,x^2y^2+16\,xy^2-48\,xy$

[6] $20\,x^2y^2+100\,xy^2-5\,xy+25\,x^2y^2-75\,x^2y+50\,xy^2+-75\,xy=45\,x^2y^2-75\,x^2y+150\,xy^2-80\,xy$

[7] $60\,x^2y+6\,xy+72\,x^2y^2+36\,x^2y-144\,xy+-6\,x^2y^2-24\,x^2y-24\,xy^2=66\,x^2y^2+72\,x^2y-24\,xy^2-138\,xy$

[8] $147\,x^2y+-49\,x^2y^2+42\,xy+(-294\,x^2y^2-7\,xy)=-343\,x^2y^2+147\,x^2y+35\,xy$

[9] $16\,x^2y^2+32\,x^2y-64\,xy^2+64\,x^2y+56\,xy+208\,x^2y^2-192\,x^2y=224\,x^2y^2-96\,x^2y-64\,xy^2+56\,xy$

[10] $243\,x^2y^2+9\,x^2y+162\,xy+9\,x^2y^2+27\,x^2y-324\,xy+-9\,x^2y^2-9\,x^2y-243\,xy=243\,x^2y^2+27\,x^2y-405\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

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

[4] $-6\,x^2y^2+27\,x^2y+27\,xy-(24\,x^2y+9\,xy^2)+(-3\,x^2y^2+27\,x^2y-12\,xy)=-9\,x^2y^2+30\,x^2y-9\,xy^2+15\,xy$

[5] $-64\,x^2y^2-16\,xy^2+-16\,x^2y^2+80\,xy^2-(-40\,x^2y+64\,xy^2)=-80\,x^2y^2+40\,x^2y$

[6] $60\,x^2y^2 - 5\,xy^2 + -15\,x^2y^2 + 15\,x^2y - 50\,xy^2 - (5\,x^2y + 90\,xy) = 45\,x^2y^2 + 10\,x^2y - 55\,xy^2 - 90\,xy$

[7] $-72\,x^2y - 18\,xy^2 - (-72\,x^2y + 120\,xy) + (-72\,x^2y^2 - 36\,xy) = -72\,x^2y^2 - 18\,xy^2 - 156\,xy$

[8] $-7\,xy^2 + -147\,x^2y^2 - 147\,xy^2 - 196\,xy - (-147\,x^2y^2 - 245\,x^2y) = 245\,x^2y - 154\,xy^2 - 196\,xy$

[9] $-128\,x^2y + 56\,xy^2 + 256\,xy - (-128\,x^2y^2 + 248\,xy) = 128\,x^2y^2 - 128\,x^2y + 56\,xy^2 + 8\,xy$

[10] $324\,x^2y^2 - 162\,x^2y + 27\,xy^2 - (-45\,x^2y^2 + 27\,xy^2) + (-90\,x^2y + 27\,xy) = 369\,x^2y^2 - 252\,x^2y + 27\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-12\,b^3xy^3z^2) \cdot (-16\,b^3x^3y^3z^2) = 192\,b^6x^4y^6z^4$

[4] $(-54\,b^2x^3y^2z) \cdot (-108\,b^2xy^3z^2) = 5832\,b^4x^4y^5z^3$

[5] $(128\,b^3xy^3z^3) \cdot (-48\,bx^3y^3z) = -6144\,b^4x^4y^6z^4$

[6] $(10\,b^3x^2y^3z^3) \cdot (-50\,b^2xy^2z^3) = -500\,b^5x^3y^5z^6$

[7] $(18\,bxy^3z^2) \cdot (-12\,b^2x^2y^3z) = -216\,b^3x^3y^6z^3$

[8] $(-49\,bxyz^2) \cdot (686\,bx^3yz^3) = -33614\,b^2x^4y^2z^5$

[9] $(128\,b^2xy^3z^3) \cdot (-1024\,bxy^3z) = -131072\,b^3x^2y^6z^4$

[10] $(-729\,bx^3y^3z^2) \cdot (-2916\,bx^2y^2z) = 2125764\,b^2x^5y^5z^3$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-3\,x^2) \cdot (5\,x^2 + 2\,x) = -15\,x^4 - 6\,x^3$

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

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

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

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

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

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

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

[9] $(-3\,x) \cdot (7\,x^2 - 3\,x) = -21\,x^3 + 9\,x^2$

[10] $(2\,x^2) \cdot (6\,x^2 + 2\,x) = 12\,x^4 + 4\,x^3$

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

[4] $(3\,x^2 - 4\,x) \cdot (-5\,x^2 - x) = -15\,x^4 + 17\,x^3 + 4\,x^2$

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

[6] $(-5\,x) \cdot (-3\,x^2 - 7\,x) = 15\,x^3 + 35\,x^2$

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

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

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

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

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

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

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

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

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

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

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

[3] $(-5\,x^2)\cdot(-7\,x^2+x)=35\,x^4-5\,x^3$

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

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

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

[7] $(3\,x^2)\cdot(4\,x^3-3\,x^2-x)=12\,x^5-9\,x^4-3\,x^3$

[8] $(4\,x^2)\cdot(7\,x^3-2\,x^2+4\,x)=28\,x^5-8\,x^4+16\,x^3$

[9] $(4\,x^3+3\,x^2)\cdot(2\,x^3-5\,x^2)=8\,x^6-14\,x^5-15\,x^4$

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

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

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

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

[14] $(5\,x^2)\cdot(-7\,x^2+x)=-35\,x^4+5\,x^3$

[15] $(0)\cdot(9\,x^2-2\,x)=0$

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

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

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

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

[20] $(-x^3-4\,x^2)\cdot(4\,x^3+5\,x^2)=-4\,x^6-21\,x^5-20\,x^4$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-4\,x^2y+3\,xy)\cdot(-2\,x^2y^2+2\,xy^2+3\,xy)=8\,x^4y^3-14\,x^3y^3-12\,x^3y^2+6\,x^2y^3+9\,x^2y^2$

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

[3] $(-5\,xy)\cdot(-2\,x^2y^2-4\,x^2y+3\,xy)=10\,x^3y^3+20\,x^3y^2-15\,x^2y^2$

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

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

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

[7] $(0)\cdot(x^2y^2+xy^2+xy)=0$