1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

[2] $8\,xy + xy^2 + 3\,xy + -2\,x^2y = -2\,x^2y + xy^2 + 11\,xy$

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

[4] $21\,x^2y^2 + -18\,x^2y^2 + 12\,x^2y + 9\,xy^2 + 6\,xy = 3\,x^2y^2 + 12\,x^2y + 9\,xy^2 + 6\,xy$

[5] $48\,x^2y^2 - 64\,x^2y + 12\,xy + -64\,xy^2 + 60\,xy + -16\,x^2y^2 + 12\,x^2y - 16\,xy = 32\,x^2y^2 - 52\,x^2y - 64\,xy^2 + 56\,xy$

[6] $15\,x^2y^2 - 20\,x^2y + 15\,xy^2 + -20\,x^2y^2 - 75\,x^2y - 100\,xy + (-50\,x^2y^2 - 45\,xy) = -55\,x^2y^2 - 95\,x^2y + 15\,xy^2 - 145\,xy$

[7] $138\,x^2y^2 + 36\,xy + -108\,x^2y^2 - 36\,x^2y + 6\,xy + 72\,x^2y = 30\,x^2y^2 + 36\,x^2y + 42\,xy$

[8] $147\,xy^2 - 126\,xy + 147\,x^2y^2 + 196\,x^2y - 196\,xy + -147\,x^2y^2 + 28\,xy^2 + 28\,xy = 196\,x^2y + 175\,xy^2 - 294\,xy$

[9] $24\,x^2y^2 + 128\,xy^2 + 192\,xy + -8\,x^2y^2 + -192\,x^2y + 32\,xy^2 = 16\,x^2y^2 - 192\,x^2y + 160\,xy^2 + 192\,xy$

[10] $-63\,x^2y^2 + 162\,xy + (-162\,x^2y^2 + 27\,xy^2 - 324\,xy) + (-27\,x^2y^2 + 27\,x^2y - 27\,xy) = -252\,x^2y^2 + 27\,x^2y + 27\,xy^2 - 189\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $4\,x^2y^2 + 4\,x^2y + 4\,x^2y^2 + 16\,x^2y + 4\,xy - (-16\,x^2y + 24\,xy^2) = 8\,x^2y^2 + 36\,x^2y - 24\,xy^2 + 4\,xy$

[4] $36\,x^2y - 6\,xy^2 + 9\,xy - (-18\,x^2y^2) + (9\,x^2y^2 + 27\,x^2y + 12\,xy) = 27\,x^2y^2 + 63\,x^2y - 6\,xy^2 + 21\,xy$

[5] $16\,x^2y^2 + 12\,xy^2 + 16\,xy + 36\,x^2y^2 + 32\,x^2y - (-44\,x^2y + 32\,xy^2) = 52\,x^2y^2 + 76\,x^2y - 20\,xy^2 + 16\,xy$

[6] $5\,x^2y + 5\,x^2y^2 - 5\,x^2y - 15\,xy^2 - (-25\,x^2y - 125\,xy^2) = 5\,x^2y^2 + 25\,x^2y + 110\,xy^2$

[7] $36\,x^2y^2 + 144\,xy - (144\,x^2y^2 - 36\,xy^2 + 24\,xy) + (18\,x^2y + 6\,xy^2 - 72\,xy) = -108\,x^2y^2 + 18\,x^2y + 42\,xy^2 + 48\,xy$

[8] $-7\,x^2y^2 - 49\,xy^2 - 147\,xy + 49\,x^2y^2 - 7\,x^2y - (-126\,x^2y + 14\,xy) = 42\,x^2y^2 + 119\,x^2y - 49\,xy^2 - 161\,xy$

[9] $64\,x^2y^2 - 16\,xy^2 + -8\,x^2y^2 + 128\,x^2y + 256\,xy^2 - (48\,x^2y + 24\,xy^2) = 56\,x^2y^2 + 80\,x^2y + 216\,xy^2$

[10] $-18\,x^2y^2 + 81\,x^2y + 18\,xy^2 - (9\,x^2y - 216\,xy^2) + (36\,x^2y^2 + 81\,xy^2 - 81\,xy) = 18\,x^2y^2 + 72\,x^2y + 315\,xy^2 - 81\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-12\,b^2xyz^3) \cdot (-24\,b^3x^2y^2z^2) = 288\,b^5x^3y^3z^5$

[4] $(-9\,bx^3y^3z^2) \cdot (81\,bx^2y^2z^2) = -729\,b^2x^5y^5z^4$

[5] $(-64\,b^3x^3y^2z^3) \cdot (-4\,b^2x^3yz^3) = 256\,b^5x^6y^3z^6$

[6] $(5\,b^3x^2y^2z^3) \cdot (125\,bx^2y^2z^3) = 625\,b^4x^4y^4z^6$

[7] $(864\,b^2x^3yz^2) \cdot (24\,b^2xyz) = 20736\,b^4x^4y^2z^3$

[8] $(-21\,bx^2y^3z^3) \cdot (-28\,b^3x^2y^2z^2) = 588\,b^4x^4y^5z^5$

[9] $(16\,bx^3y^3z) \cdot (-24\,b^2x^3y^3z^3) = -384\,b^3x^6y^6z^4$

[10] $(-243\,bxy^3z) \cdot (-2187\,b^2x^2yz^3) = 531441\,b^3x^3y^4z^4$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

[2] $(-4\,x^2) \cdot (-5\,x^2 + 6\,x) = 20\,x^4 - 24\,x^3$

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

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

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

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

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

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

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

[10] $(4\,x^2) \cdot (-5\,x^2 - 7\,x) = -20\,x^4 - 28\,x^3$

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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

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

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

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

[11] $(-3\,x^2+3\,x)\cdot(2\,x^2+5\,x)=-6\,x^4-9\,x^3+15\,x^2$

[12] $(2\,x^2-3\,x)\cdot(-7\,x^2)=-14\,x^4+21\,x^3$

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

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

[15] $(2\,x^2+x)\cdot(-4\,x^2+7\,x)=-8\,x^4+10\,x^3+7\,x^2$

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-3\,x^3-x^2+2\,x)\cdot(-3\,x^2-x)=9\,x^5+6\,x^4-5\,x^3-2\,x^2$

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

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

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

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

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

[7] $(-x^3+5\,x)\cdot(2\,x^2-7\,x)=-2\,x^5+7\,x^4+10\,x^3-35\,x^2$

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

[9] $(6\,x^3)\cdot(-2\,x^3+7\,x^2)=-12\,x^6+42\,x^5$

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

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

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

[13] $(-4\,x^2)\cdot(8\,x^3+2\,x)=-32\,x^5-8\,x^3$

[14] $(-4\,x^2+2\,x)\cdot(-2\,x^3-3\,x^2+4\,x)=8\,x^5+8\,x^4-22\,x^3+8\,x^2$

[15] $(-4\,x^2+4\,x)\cdot(-x^3+2\,x^2)=4\,x^5-12\,x^4+8\,x^3$

[16] $(-2\,x^3-4\,x^2)\cdot(3\,x^2+7\,x)=-6\,x^5-26\,x^4-28\,x^3$

[17] $(-3\,x^3)\cdot(x^3+7\,x^2+2\,x)=-3\,x^6-21\,x^5-6\,x^4$

[18] $(2\,x^3-2\,x^2)\cdot(4\,x^3-2\,x)=8\,x^6-8\,x^5-4\,x^4+4\,x^3$

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

[20] $(4\,x^3+3\,x)\cdot(-2\,x^3+2\,x^2+x)=-8\,x^6+8\,x^5-2\,x^4+6\,x^3+3\,x^2$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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