1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

[2] $2\,x^4 - x^3 + 2\,x + x^6 + 7\,x^5 + -3\,x^6 + 4\,x^5 + x = -2\,x^6 + 11\,x^5 + 2\,x^4 - x^3 + 3\,x$

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $-6\,xy^2 + (-8\,xy^2) + (-4\,xy^2 + 20\,xy) = -18\,xy^2 + 20\,xy$

[4] $30\,x^2y^2 + -18\,x^2y^2 + 18\,x^2y + 12\,xy + -3\,x^2y^2 + 6\,x^2y + 12\,xy^2 = 9\,x^2y^2 + 24\,x^2y + 12\,xy^2 + 12\,xy$

[5] $16\,x^2y + 16\,xy^2 - 64\,xy + -60\,x^2y - 16\,xy^2 + 16\,x^2y + 16\,xy^2 = -28\,x^2y + 16\,xy^2 - 64\,xy$

[6] $15\,x^2y^2 + 50\,x^2y - 10\,xy + -15\,x^2y^2 - 100\,xy + -5\,xy^2 = 50\,x^2y - 5\,xy^2 - 110\,xy$

[7] $180\,x^2y^2 - 36\,xy + 144\,x^2y^2 + 12\,xy^2 + 24\,xy + -24\,x^2y^2 + 84\,xy = 300\,x^2y^2 + 12\,xy^2 + 72\,xy$

[8] $147\,x^2y^2 - 42\,x^2y + -98\,x^2y^2 + 28\,x^2y - 196\,xy + 49\,x^2y^2 + 217\,x^2y = 98\,x^2y^2 + 203\,x^2y - 196\,xy$

[9] $-64\,xy^2 + 184\,xy + (-8\,x^2y^2 + 176\,xy^2) + (-32\,x^2y^2 - 32\,x^2y) = -40\,x^2y^2 - 32\,x^2y + 112\,xy^2 + 184\,xy$

[10] $324\,x^2y - 9\,xy^2 - 81\,xy + 207\,xy + -288\,x^2y + 81\,xy = 36\,x^2y - 9\,xy^2 + 207\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

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

[4] $-18\,x^2y - 15\,xy^2 - (-12\,x^2y^2 - 9\,x^2y - 9\,xy) + (-12\,x^2y - 12\,xy^2) = 12\,x^2y^2 - 21\,x^2y - 27\,xy^2 + 9\,xy$

[5] $-32\,x^2y^2 + 4\,xy^2 - 12\,xy + -64\,x^2y^2 - 4\,xy - (-16\,x^2y^2 - 4\,x^2y + 48\,xy) = -80\,x^2y^2 + 4\,x^2y + 4\,xy^2 - 64\,xy$

[6] $-5\,x^2y^2 + 10\,xy^2 + -10\,x^2y + 15\,xy^2 - (-80\,x^2y^2 - 5\,x^2y) = 75\,x^2y^2 - 5\,x^2y + 25\,xy^2$

[7] $102\,x^2y + 12\,xy - (-36\,x^2y^2 + 72\,x^2y + 18\,xy^2) + (6\,x^2y^2 + 144\,xy^2 + 6\,xy) = 42\,x^2y^2 + 30\,x^2y + 126\,xy^2 + 18\,xy$

[8] $-7\,x^2y^2 + 28\,x^2y + 49\,xy^2 + -140\,x^2y - 196\,xy - (196\,x^2y^2 - 49\,x^2y) = -203\,x^2y^2 - 63\,x^2y + 49\,xy^2 - 196\,xy$

[9] $-40\,x^2y^2+32\,xy^2+480\,xy-(-240\,x^2y) = -40\,x^2y^2+240\,x^2y+32\,xy^2+480\,xy$

[10] $-243\,x^2y + 324\,xy^2 + 9\,xy - (-162\,x^2y^2 + 18\,x^2y - 36\,xy) + (315\,x^2y^2 + 27\,xy^2) = 477\,x^2y^2 - 261\,x^2y + 351\,xy^2 + 45\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-24\,b^3x^2yz^2) \cdot (-2\,b^3xy^2z) = 48\,b^6x^3y^3z^3$

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

[5] $(32\,bx^2yz^2) \cdot (32\,bx^2y^3z^3) = 1024\,b^2x^4y^4z^5$

[6] $(50\,b^3x^3y^2z) \cdot (-100\,bx^2y^2z^2) = -5000\,b^4x^5y^4z^3$

[7] $(432\,b^2xy^3z) \cdot (-864\,b^2x^2yz^2) = -373248\,b^4x^3y^4z^3$

[8] $(-147\,b^3x^3y^3z) \cdot (98\,b^3xyz^3) = -14406\,b^6x^4y^4z^4$

[9] $(512\,b^3x^3y^3z^2) \cdot (-8\,bxy^3z^2) = -4096\,b^4x^4y^6z^4$

[10] $(2916\,b^2x^3yz) \cdot (-81\,b^3x^2y^2z^2) = -236196\,b^5x^5y^3z^3$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

[4] $(4\,x^2) \cdot (7\,x^2 + 3\,x) = 28\,x^4 + 12\,x^3$

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

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

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

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

[9] $(-4\,x^2) \cdot (7\,x^2 - x) = -28\,x^4 + 4\,x^3$

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

[3] $(-4\,x^2) \cdot (9\,x) = -36\,x^3$

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

[5] $(3\,x^2 - 2\,x) \cdot (-2\,x^2 + 7\,x) = -6\,x^4 + 25\,x^3 - 14\,x^2$

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

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

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

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

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

[11] $(0)\cdot(-7\,x^2+4\,x)=0$

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

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

[14] $(x^2-3\,x)\cdot(6\,x^2-4\,x)=6\,x^4-22\,x^3+12\,x^2$

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

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

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

[3] $(-3\,x^2)\cdot(-8\,x^2+4\,x)=24\,x^4-12\,x^3$

[4] $(2\,x^3-3\,x^2+2\,x)\cdot(-x^3-4\,x)=-2\,x^6+3\,x^5-10\,x^4+12\,x^3-8\,x^2$

[5] $(-4\,x^3-4\,x)\cdot(10\,x^3+2\,x)=-40\,x^6-48\,x^4-8\,x^2$

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

[7] $(-2\,x^3+7\,x^2)\cdot(0)=0$

[8] $(4\,x^3-2\,x)\cdot(3\,x^3+2\,x^2)=12\,x^6+8\,x^5-6\,x^4-4\,x^3$

[9] $(-2\,x^3-3\,x^2)\cdot(8\,x^3-2\,x^2-x)=-16\,x^6-20\,x^5+8\,x^4+3\,x^3$

[10] $(-2\,x^2-3\,x)\cdot(6\,x^3-x)=-12\,x^5-18\,x^4+2\,x^3+3\,x^2$

[11] $(-3\,x^2-3\,x)\cdot(-3\,x^3-4\,x^2-6\,x)=9\,x^5+21\,x^4+30\,x^3+18\,x^2$

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

[13] $(-2\,x^3+2\,x^2-x)\cdot(-4\,x^3-3\,x^2)=8\,x^6-2\,x^5-2\,x^4+3\,x^3$

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

[15] $(3\,x^3)\cdot(6\,x^2+4\,x)=18\,x^5+12\,x^4$

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

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

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

[19] $(-2\,x^3-3\,x)\cdot(4\,x^3+4\,x^2-4\,x)=-8\,x^6-8\,x^5-4\,x^4-12\,x^3+12\,x^2$

[20] $(3\,x^2)\cdot(10\,x^2+4\,x)=30\,x^4+12\,x^3$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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