1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $10\,x^2y^2 - 6\,xy^2 + 8\,x^2y^2 + 8\,xy^2 + 4\,xy + -14\,x^2y^2 - 6\,xy^2 = 4\,x^2y^2 - 4\,xy^2 + 4\,xy$

[4] $3\,x^2y^2 + 24\,xy + -9\,xy^2 - 18\,xy + -9\,x^2y - 6\,xy^2 - 27\,xy = 3\,x^2y^2 - 9\,x^2y - 15\,xy^2 - 21\,xy$

[5] $4\,x^2y^2 - 16\,xy^2 + -40\,x^2y^2 + 4\,xy + 64\,xy^2 + 8\,xy = -36\,x^2y^2 + 48\,xy^2 + 12\,xy$

[6] $20\,x^2y^2 - 10\,x^2y - 100\,xy^2 + -15\,x^2y^2 - 75\,x^2y - 5\,xy^2 + -100\,x^2y^2 - 75\,xy^2 = -95\,x^2y^2 - 85\,x^2y - 180\,xy^2$

[7] $84\,x^2y^2 + 36\,xy^2 + -18\,x^2y^2 + 72\,xy^2 + (-18\,x^2y^2 - 144\,x^2y) = 48\,x^2y^2 - 144\,x^2y + 108\,xy^2$

[8] $196\,x^2y + 7\,xy^2 - 28\,xy + -147\,x^2y^2 + -21\,x^2y^2 - 28\,xy^2 - 21\,xy = -168\,x^2y^2 + 196\,x^2y - 21\,xy^2 - 49\,xy$

[9] $32\,x^2y^2 - 384\,xy^2 + -24\,x^2y - 40\,xy^2 + 24\,x^2y^2 + 16\,x^2y - 24\,xy^2 = 56\,x^2y^2 - 8\,x^2y - 448\,xy^2$

[10] $9\,x^2y^2 + 171\,xy^2 + -18\,x^2y^2 + 18\,xy^2 - 27\,xy + 99\,x^2y^2 - 81\,x^2y = 90\,x^2y^2 - 81\,x^2y + 189\,xy^2 - 27\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $-2\,x^2y^2 + 8\,xy^2 + -4\,x^2y^2 - 4\,xy^2 - (-4\,xy^2 - 32\,xy) = -6\,x^2y^2 + 8\,xy^2 + 32\,xy$

[4] $-9\,x^2y^2 + 9\,xy - (18\,x^2y - 18\,xy^2 - 12\,xy) + (-12\,x^2y + 9\,xy^2 + 18\,xy) = -9\,x^2y^2 - 30\,x^2y + 27\,xy^2 + 39\,xy$

[5] $64\,x^2y^2 + 68\,x^2y + -48\,x^2y + 112\,xy - (4\,x^2y^2 - 40\,x^2y) = 60\,x^2y^2 + 60\,x^2y + 112\,xy$

[6] $50\,x^2y^2 + 25\,xy + 10\,x^2y + 30\,xy^2 - (150\,x^2y^2 - 75\,x^2y) = -100\,x^2y^2 + 85\,x^2y + 30\,xy^2 + 25\,xy$

[7] $12\,x^2y^2 + 18\,xy^2 - (18\,x^2y^2 + 36\,x^2y) + (24\,x^2y^2 - 144\,xy^2) = 18\,x^2y^2 - 36\,x^2y - 126\,xy^2$

[8] $-28\,xy^2 + 245\,xy + 126\,x^2y^2 - 49\,xy - (-147\,x^2y - 28\,xy^2 - 7\,xy) = 126\,x^2y^2 + 147\,x^2y + 203\,xy$

[9] $-32\,x^2y^2 - 88\,x^2y + 96\,x^2y^2 + 64\,xy^2 - (-8\,x^2y^2 + 264\,xy) = 72\,x^2y^2 - 88\,x^2y + 64\,xy^2 - 264\,xy$

[10] $261\,x^2y - (81\,x^2y - 27\,xy^2) + (-81\,x^2y^2 - 324\,xy^2) = -81\,x^2y^2 + 180\,x^2y - 297\,xy^2$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-16\,b^3x^2y^3z) \cdot (24\,b^3x^2y^2z) = -384\,b^6x^4y^5z^2$

[4] $(9\,b^3x^2y^3z^3) \cdot (27\,b^2x^2y^2z^2) = 243\,b^5x^4y^5z^5$

[5] $(12\,b^2x^3y^2z^2) \cdot (-64\,bx^2yz^2) = -768\,b^3x^5y^3z^4$

[6] $(-75\,b^2xy^2z^2) \cdot (50\,b^2x^3y^3z^2) = -3750\,b^4x^4y^5z^4$

[7] $(216\,b^3xy^2z) \cdot (24\,b^3x^2y^2z) = 5184\,b^6x^3y^4z^2$

[8] $(343\,bx^2y^2z^2) \cdot (-343\,b^2x^2y^3z^3) = -117649\,b^3x^4y^5z^5$

[9] $(-16\,b^3xy^3z^2) \cdot (192\,b^3xyz^2) = -3072\,b^6x^2y^4z^4$

[10] $(-1458\,b^2x^3y^2z^2) \cdot (2187\,bxy^3z) = -3188646\,b^3x^4y^5z^3$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

[4] $(0) \cdot (5\,x^2 - 4\,x) = 0$

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

[6] $(-3\,x^2+4\,x)\cdot(5\,x)=-15\,x^3+20\,x^2$

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

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

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

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

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

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

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

[14] $(4\,x^2+4\,x)\cdot(-8\,x^2)=-32\,x^4-32\,x^3$

[15] $(4\,x^2+x)\cdot(8\,x^2-4\,x)=32\,x^4-8\,x^3-4\,x^2$

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-3\,x^3+4\,x^2+3\,x)\cdot(x^2+4\,x)=-3\,x^5-8\,x^4+19\,x^3+12\,x^2$

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

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

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

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

[6] $(2\,x^3+4\,x^2)\cdot(9\,x^2)=18\,x^5+36\,x^4$

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

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

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

[10] $(8\,x^2)\cdot(-7\,x^3)=-56\,x^5$

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

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

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

[14] $(-4\,x^3-3\,x)\cdot(-7\,x^3-x)=28\,x^6+25\,x^4+3\,x^2$

[15] $(-6\,x)\cdot(8\,x^2-8\,x)=-48\,x^3+48\,x^2$

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

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

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

[19] $(-4\,x^2+3\,x)\cdot(x^2-7\,x)=-4\,x^4+31\,x^3-21\,x^2$

[20] $(3\,x^2+4\,x)\cdot(6\,x)=18\,x^3+24\,x^2$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

[5] $(4\,x^2y^2 + 3\,xy^2) \cdot (-2\,x^2y + 4\,xy^2 - 2\,xy) = -8\,x^4y^3 + 16\,x^3y^4 - 14\,x^3y^3 + 12\,x^2y^4 - 6\,x^2y^3$

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

[7] $(3\,xy^2 - 3\,xy) \cdot (-3\,x^2y + xy^2 - 4\,xy) = -9\,x^3y^3 + 3\,x^2y^4 + 9\,x^3y^2 - 15\,x^2y^3 + 12\,x^2y^2$