1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

[9] $-2\,x^2 - 4\,x + (-4\,x^6 - 7\,x) + (-2\,x^6 - x^5 + 2\,x^3) = -6\,x^6 - x^5 + 2\,x^3 - 2\,x^2 - 11\,x$

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

[2] $2\,x^2y^2 + 4\,x^2y - 4\,xy^2 + 8\,x^2y^2 + xy + x^2y + 2\,xy^2 = 10\,x^2y^2 + 5\,x^2y - 2\,xy^2 + xy$

[3] $4\,x^2y^2 + 2\,x^2y + 4\,xy^2 + 4\,x^2y^2 - 6\,x^2y + 12\,x^2y^2 - 8\,x^2y - 8\,xy = 20\,x^2y^2 - 12\,x^2y + 4\,xy^2 - 8\,xy$

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

[5] $40\,xy^2 + 16\,xy + -48\,x^2y^2 - 64\,x^2y - 16\,xy + (-4\,x^2y^2 + 16\,x^2y) = -52\,x^2y^2 - 48\,x^2y + 40\,xy^2$

[6] $100\,x^2y^2 - 15\,x^2y - 75\,xy^2 + -20\,x^2y^2 + 20\,x^2y + 50\,xy^2 + (-105\,x^2y + 5\,xy) = 80\,x^2y^2 - 100\,x^2y - 25\,xy^2 + 5\,xy$

[7] $24\,x^2y^2 - 114\,x^2y + 66\,x^2y^2 - 144\,xy + -72\,x^2y^2 + 144\,xy^2 = 18\,x^2y^2 - 114\,x^2y + 144\,xy^2 - 144\,xy$

[8] $-7\,x^2y^2 - 91\,xy + (-14\,x^2y^2 - 98\,x^2y - 7\,xy) + (-98\,x^2y^2 + 147\,x^2y + 147\,xy) = -119\,x^2y^2 + 49\,x^2y + 49\,xy$

[9] $-24\,x^2y^2 - 280\,xy^2 + (-24\,xy^2 - 320\,xy) + (-192\,xy^2) = -24\,x^2y^2 - 496\,xy^2 - 320\,xy$

[10] $18\,x^2y + 36\,xy^2 - 162\,xy + 18\,x^2y^2 - 9\,x^2y - 324\,xy + 108\,x^2y^2 - 324\,xy = 126\,x^2y^2 + 9\,x^2y + 36\,xy^2 - 810\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

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

[4] $-12\,x^2y^2 + 27\,xy^2 - 3\,xy - (-6\,x^2y + 3\,xy) + (-9\,x^2y^2 + 18\,xy) = -21\,x^2y^2 + 6\,x^2y + 27\,xy^2 + 12\,xy$

[5] $32\,x^2y - 32\,xy + 32\,x^2y^2 + 8\,xy^2 - 48\,xy - (-64\,x^2y^2 + 12\,xy^2 + 12\,xy) = 96\,x^2y^2 + 32\,x^2y - 4\,xy^2 - 92\,xy$

[6] $25\,x^2y^2 + 95\,xy^2 + -10\,xy^2 + 85\,xy - (-75\,x^2y^2 - 50\,x^2y - 20\,xy^2) = 100\,x^2y^2 + 50\,x^2y + 105\,xy^2 + 85\,xy$

[7] $12\,x^2y^2 - 18\,xy^2 - 144\,xy - (12\,x^2y^2 + 24\,x^2y + 72\,xy^2) + (18\,x^2y^2 + 18\,x^2y) = 18\,x^2y^2 - 6\,x^2y - 90\,xy^2 - 144\,xy$

[8] $98\,xy + -21\,x^2y^2 + 196\,x^2y - 7\,xy - (-49\,x^2y^2 - 7\,xy^2 - 21\,xy) = 28\,x^2y^2 + 196\,x^2y + 7\,xy^2 + 112\,xy$

[9] $-16\,x^2y - 24\,xy + -8\,x^2y^2 + 192\,xy^2 + 8\,xy - (-176\,x^2y + 64\,xy^2) = -8\,x^2y^2 + 160\,x^2y + 128\,xy^2 - 16\,xy$

[10] $171\,x^2y - 243\,xy - (27\,x^2y) + (171\,x^2y^2 - 36\,xy) = 171\,x^2y^2 + 144\,x^2y - 279\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

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

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

[5] $(256\,b^3x^3yz^2) \cdot (-192\,bx^2y^3z^2) = -49152\,b^4x^5y^4z^4$

[6] $(-10\,b^3xy^3z^2) \cdot (10\,b^3x^2yz^3) = -100\,b^6x^3y^4z^5$

[7] $(-216\,b^2xy^3z^3) \cdot (72\,b^3x^3y^2z^2) = -15552\,b^5x^4y^5z^5$

[8] $(-1372\,b^3xy^2z) \cdot (14\,bx^2y^3z^2) = -19208\,b^4x^3y^5z^3$

[9] $(512\,b^2x^3yz) \cdot (-24\,bx^2yz^3) = -12288\,b^3x^5y^2z^4$

[10] $(-9\,bxy^3z^2) \cdot (-27\,bx^2yz) = 243\,b^2x^3y^4z^3$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

[2] $(-3\,x^2) \cdot (6\,x^2 - 8\,x) = -18\,x^4 + 24\,x^3$

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

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

[5] $(3\,x) \cdot (9\,x^2) = 27\,x^3$

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

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

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-5\,x^2) \cdot (2\,x^2 + 3\,x) = -10\,x^4 - 15\,x^3$

[2] $(4\,x^2 - x) \cdot (3\,x^2 - 7\,x) = 12\,x^4 - 31\,x^3 + 7\,x^2$

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

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

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

[6] $(-x^2 - 4\,x) \cdot (-4\,x^2 - 6\,x) = 4\,x^4 + 22\,x^3 + 24\,x^2$

[7] $(-4\,x^2 + 4\,x) \cdot (3\,x^2 - x) = -12\,x^4 + 16\,x^3 - 4\,x^2$

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

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

[10] $(-2\,x^2 - 3\,x) \cdot (5\,x^2 - 4\,x) = -10\,x^4 - 7\,x^3 + 12\,x^2$

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

[12] $(7\,x) \cdot (-3\,x^2 + 4\,x) = -21\,x^3 + 28\,x^2$

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

[14] $(-3\,x^2 - 4\,x) \cdot (-3\,x^2 - 6\,x) = 9\,x^4 + 30\,x^3 + 24\,x^2$

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

Ejercicio 6:   Realiza las siguientes multiplicaciones de polinomios:

[1] $(2\,x^3 - 4\,x^2 + 2\,x) \cdot (-4\,x^3 + 3\,x^2 + 2\,x) = -8\,x^6 + 22\,x^5 - 16\,x^4 - 2\,x^3 + 4\,x^2$

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

[3] $(5\,x^3) \cdot (-8\,x^3 + 2\,x^2 - 3\,x) = -40\,x^6 + 10\,x^5 - 15\,x^4$

[4] $(4\,x^3 + 5\,x^2) \cdot (-4\,x^3 - 4\,x^2) = -16\,x^6 - 36\,x^5 - 20\,x^4$

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

[6] $(0) \cdot (-3\,x^3 - x^2 + 4\,x) = 0$

[7] $(2\,x^3 - 7\,x) \cdot (x^3 - 6\,x^2) = 2\,x^6 - 12\,x^5 - 7\,x^4 + 42\,x^3$

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

[9] $(0) \cdot (-2\,x^3 + 4\,x^2 + 2\,x) = 0$

[10] $(-7\,x^3 + 3\,x) \cdot (-4\,x^3 - 4\,x^2 + x) = 28\,x^6 + 28\,x^5 - 19\,x^4 - 12\,x^3 + 3\,x^2$

[11] $(-3\,x^3 - 3\,x) \cdot (2\,x^3 + 4\,x) = -6\,x^6 - 18\,x^4 - 12\,x^2$

[12] $(-5\,x) \cdot (-2\,x^2 - 6\,x) = 10\,x^3 + 30\,x^2$

[13] $(-3\,x^3 + 8\,x) \cdot (10\,x^3) = -30\,x^6 + 80\,x^4$

[14] $(-x^3 + 4\,x^2) \cdot (-4\,x^3 + 6\,x^2 - 2\,x) = 4\,x^6 - 22\,x^5 + 26\,x^4 - 8\,x^3$

[15] $(3\,x^3 - x^2) \cdot (-2\,x^3 - 7\,x) = -6\,x^6 + 2\,x^5 - 21\,x^4 + 7\,x^3$

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

[17] $(-2\,x^3 + x) \cdot (x^3 + 4\,x^2 + x) = -2\,x^6 - 8\,x^5 - x^4 + 4\,x^3 + x^2$

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

[19] $(-2\,x^3 - x^2 + x) \cdot (-3\,x^2 - 6\,x) = 6\,x^5 + 15\,x^4 + 3\,x^3 - 6\,x^2$

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

Ejercicio 7:   Realiza las siguientes multiplicaciones de polinomios:

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

[2] $(3\,x^2y + 4\,xy^2) \cdot (x^2y + 2\,xy^2 + 3\,xy) = 3\,x^4y^2 + 10\,x^3y^3 + 8\,x^2y^4 + 9\,x^3y^2 + 12\,x^2y^3$

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

[4] $(0) \cdot (2\,x^2y^2 + 3\,xy) = 0$

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

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

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