1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

[1] $-2\,x^6 - 3\,x^4 + x^2 + (-4\,x^4 + 2\,x^3 - x^2) + (-6\,x^6 + 4\,x) = -8\,x^6 - 7\,x^4 + 2\,x^3 + 4\,x$

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $-8\,x^2y - 8\,xy^2 + 6\,xy + (-2\,x^2y^2 + 12\,x^2y + 16\,xy) + (-10\,xy^2 + 4\,xy) = -2\,x^2y^2 + 4\,x^2y - 18\,xy^2 + 26\,xy$

[4] $3\,x^2y^2 + 36\,xy^2 + 18\,xy + -18\,x^2y^2 - 27\,xy + 9\,x^2y - 18\,xy = -15\,x^2y^2 + 9\,x^2y + 36\,xy^2 - 27\,xy$

[5] $64\,x^2y^2 - 16\,xy^2 - 16\,xy + -48\,x^2y - 16\,xy^2 + 48\,xy + 32\,x^2y - 64\,xy^2 + 16\,xy = 64\,x^2y^2 - 16\,x^2y - 96\,xy^2 + 48\,xy$

[6] $25\,x^2y + 10\,xy + 75\,x^2y + 30\,xy + 70\,x^2y^2 - 5\,x^2y = 70\,x^2y^2 + 95\,x^2y + 40\,xy$

[7] $72\,x^2y^2 - 36\,xy^2 - 12\,xy + -120\,x^2y^2 - 18\,xy + -36\,x^2y^2 + 108\,xy^2 - 12\,xy = -84\,x^2y^2 + 72\,xy^2 - 42\,xy$

[8] $98\,x^2y^2 - 21\,x^2y + -7\,xy + -7\,x^2y - 196\,xy^2 + 14\,xy = 98\,x^2y^2 - 28\,x^2y - 196\,xy^2 + 7\,xy$

[9] $128\,x^2y^2 - 64\,xy^2 + 16\,xy + 256\,x^2y^2 + 128\,xy^2 - 256\,xy + 128\,x^2y^2 + 128\,xy^2 - 64\,xy = 512\,x^2y^2 + 192\,xy^2 - 304\,xy$

[10] $-144\,xy + (-252\,x^2y^2 - 243\,xy) + (-27\,x^2y + 18\,xy^2 + 9\,xy) = -252\,x^2y^2 - 27\,x^2y + 18\,xy^2 - 378\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $4\,xy^2 + 20\,xy + 10\,x^2y - 8\,xy^2 - (-18\,x^2y^2 + 12\,x^2y) = 18\,x^2y^2 - 2\,x^2y - 4\,xy^2 + 20\,xy$

[4] $-27\,xy^2 + 12\,xy - (33\,x^2y^2 + 27\,xy^2) + (3\,x^2y - 36\,xy^2 - 27\,xy) = -33\,x^2y^2 + 3\,x^2y - 90\,xy^2 - 15\,xy$

[5] $12\,x^2y - 96\,xy^2 + 4\,xy^2 - 16\,xy - (32\,x^2y^2 + 28\,xy) = -32\,x^2y^2 + 12\,x^2y - 92\,xy^2 - 44\,xy$

[6] $25\,xy^2 - 70\,xy + -50\,xy^2 - (-15\,x^2y^2 + 20\,x^2y + 25\,xy) = 15\,x^2y^2 - 20\,x^2y - 25\,xy^2 - 95\,xy$

[7] $-96\,x^2y^2 - 24\,xy - (-18\,xy^2 - 108\,xy) + (30\,xy^2 + 6\,xy) = -96\,x^2y^2 + 48\,xy^2 + 90\,xy$

[8] $-21\,x^2y - 147\,xy^2 - 7\,xy + 196\,xy^2 + 14\,xy - (147\,x^2y^2 + 21\,x^2y - 196\,xy^2) = -147\,x^2y^2 - 42\,x^2y + 245\,xy^2 + 7\,xy$

[9] $224\,x^2y + 128\,x^2y - 16\,xy^2 - (8\,xy^2 - 64\,xy) = 352\,x^2y - 24\,xy^2 + 64\,xy$

[10] $9\,x^2y^2 - 243\,x^2y - 36\,xy - (-162\,x^2y^2 + 162\,xy^2 - 9\,xy) + (-9\,x^2y - 261\,xy^2) = 171\,x^2y^2 - 252\,x^2y - 423\,xy^2 - 27\,xy$

Ejercicio 3:   Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(6\,b^3xyz^3) \cdot (8\,b^2x^3y^2z^2) = 48\,b^5x^4y^3z^5$

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

[5] $(64\,b^2xy^3z^3) \cdot (48\,bx^3y^3z) = 3072\,b^3x^4y^6z^4$

[6] $(-25\,bx^2y^2z^2) \cdot (20\,b^3x^3yz) = -500\,b^4x^5y^3z^3$

[7] $(648\,b^3x^2y^2z^3) \cdot (36\,bx^3y^3z) = 23328\,b^4x^5y^5z^4$

[8] $(49\,b^3xyz^2) \cdot (-28\,b^3xy^3z) = -1372\,b^6x^2y^4z^3$

[9] $(-8\,b^2x^3y^2z^2) \cdot (-512\,bx^2y^2z^3) = 4096\,b^3x^5y^4z^5$

[10] $(-18\,b^3xyz^3) \cdot (2916\,b^2x^2y^3z^3) = -52488\,b^5x^3y^4z^6$

Ejercicio 4:   Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 5:   Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

[5] $(4\,x^2 + 4\,x) \cdot (x^2 + 7\,x) = 4\,x^4 + 32\,x^3 + 28\,x^2$

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

[7] $(0) \cdot (x^2 + 5\,x) = 0$

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

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

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

[11] $(-2\,x) \cdot (-8\,x^2 - x) = 16\,x^3 + 2\,x^2$

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

[13] $(-3\,x^2 - 3\,x) \cdot (2\,x^2 - 7\,x) = -6\,x^4 + 15\,x^3 + 21\,x^2$

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

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

[7] $(2\,x^3 - 4\,x^2 + x) \cdot (-6\,x^2) = -12\,x^5 + 24\,x^4 - 6\,x^3$

[8] $(-x^3 - 4\,x) \cdot (-2\,x^2 + 6\,x) = 2\,x^5 - 6\,x^4 + 8\,x^3 - 24\,x^2$

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

[10] $(-7\,x^3 + 4\,x) \cdot (4\,x) = -28\,x^4 + 16\,x^2$

[11] $(-3\,x^2 - 2\,x) \cdot (4\,x^3 - x^2 + 2\,x) = -12\,x^5 - 5\,x^4 - 4\,x^3 - 4\,x^2$

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

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

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

[15] $(-x^2 + 2\,x) \cdot (5\,x^3 - 3\,x^2 + x) = -5\,x^5 + 13\,x^4 - 7\,x^3 + 2\,x^2$

[16] $(3\,x^2 + 2\,x) \cdot (-x^2 - 4\,x) = -3\,x^4 - 14\,x^3 - 8\,x^2$

[17] $(3\,x^2 + x) \cdot (-4\,x^2) = -12\,x^4 - 4\,x^3$

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

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

[20] $(-2\,x^3 + 3\,x) \cdot (-5\,x^3 + x^2) = 10\,x^6 - 2\,x^5 - 15\,x^4 + 3\,x^3$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

[6] $(-3\,x^2y + 4\,xy^2) \cdot (4\,x^2y + xy^2 + 4\,xy) = -12\,x^4y^2 + 13\,x^3y^3 + 4\,x^2y^4 - 12\,x^3y^2 + 16\,x^2y^3$

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