1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

[2] $2x^2y^2 + x^2y + 2xy^2 + x^2y^2 + 3x^2y + xy^2 + 4x^2y^2 - 2xy^2 = 7x^2y^2 + 4x^2y + xy^2$

[3] $8x^2y - 6xy + -4x^2y^2 + 12xy^2 - 16xy + (-22xy^2 - 4xy) = -4x^2y^2 + 8x^2y - 10xy^2 - 26xy$

[4] $-27x^2y^2 + 12x^2y + (-6x^2y^2 + 54xy^2) + (-9x^2y) = -33x^2y^2 + 3x^2y + 54xy^2$

[5] $16x^2y^2 + 8x^2y + -20x^2y^2 + 8xy^2 + -16x^2y^2 + 8x^2y = -20x^2y^2 + 16x^2y + 8xy^2$

[6] $20x^2y^2 - 5xy + -80xy^2 + -100x^2y^2 + 150x^2y = -80x^2y^2 + 150x^2y - 80xy^2 - 5xy$

[7] $48x^2y^2 + 36x^2y + -108x^2y^2 + 108xy^2 - 6xy + -18x^2y^2 - 12xy^2 + 72xy = -78x^2y^2 + 36x^2y + 96xy^2 + 66xy$

[8] $175x^2y^2 - 28xy + 147x^2y^2 + 203xy^2 + -49x^2y - 168xy^2 = 322x^2y^2 - 49x^2y + 35xy^2 - 28xy$

[9] $208x^2y + 128xy^2 + -320x^2y^2 + 32xy + -8x^2y^2 - 288xy = -328x^2y^2 + 208x^2y + 128xy^2 - 256xy$

[10] $-18x^2y + 18xy^2 - 81xy + (-45x^2y + 18xy) + (-36x^2y^2 - 324x^2y - 243xy) = -36x^2y^2 - 387x^2y + 18xy^2 - 306xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $-2x^2y + 2xy^2 - 2xy + -14xy^2 - 4xy - (4x^2y^2 - 8x^2y + 4xy) = -4x^2y^2 + 6x^2y - 12xy^2 - 10xy$

[4] $36x^2y^2 - 9x^2y - 18xy - (27x^2y^2 + 39xy^2) + (6xy^2) = 9x^2y^2 - 9x^2y - 33xy^2 - 18xy$

[5] $-16xy^2 + 20xy + 4x^2y^2 - 48x^2y + 64xy^2 - (-32x^2y^2 + 20x^2y) = 36x^2y^2 - 68x^2y + 48xy^2 + 20xy$

[6] $25\,x^2y^2 + 5\,xy^2 - 20\,xy + 100\,x^2y + 75\,xy^2 + 100\,xy - (20\,x^2y^2 + 110\,xy^2) = 5\,x^2y^2 + 100\,x^2y - 30\,xy^2 + 80\,xy$

[7] $36\,x^2y^2 + 30\,x^2y - (72\,x^2y^2 - 108\,x^2y + 108\,xy^2) + (-72\,x^2y^2 - 108\,x^2y + 36\,xy^2) = -108\,x^2y^2 + 30\,x^2y - 72\,xy^2$

[8] $-14\,x^2y + 14\,xy^2 + 98\,x^2y^2 - 98\,x^2y - 28\,xy^2 - (-196\,x^2y^2 - 98\,xy) = 294\,x^2y^2 - 112\,x^2y - 14\,xy^2 + 98\,xy$

[9] $-16\,x^2y + 192\,xy + -256\,x^2y^2 - 256\,x^2y - 32\,xy^2 - (-24\,x^2y - 64\,xy) = -256\,x^2y^2 - 248\,x^2y - 32\,xy^2 + 256\,xy$

[10] $324\,x^2y^2 - 81\,x^2y - 27\,xy - (-351\,x^2y^2 - 324\,xy^2) + (270\,x^2y^2 - 9\,x^2y) = 945\,x^2y^2 - 90\,x^2y + 324\,xy^2 - 27\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(4\,bx^2yz^3) \cdot (16\,bxy^3z^2) = 64\,b^2x^3y^4z^5$

[4] $(81\,bxy^3z^3) \cdot (-6\,bx^3yz^3) = -486\,b^2x^4y^4z^6$

[5] $(-48\,bx^2y^2z^3) \cdot (16\,b^3x^2yz^2) = -768\,b^4x^4y^3z^5$

[6] $(-125\,b^3x^2y^2z) \cdot (-10\,b^3x^2y^3z) = 1250\,b^6x^4y^5z^2$

[7] $(-18\,bxy^3z^3) \cdot (-18\,b^2x^3yz^2) = 324\,b^3x^4y^4z^5$

[8] $(343\,b^3x^2y^2z^3) \cdot (21\,b^3x^3y^3z) = 7203\,b^6x^5y^5z^4$

[9] $(-1024\,b^3x^2y^2z^2) \cdot (24\,b^3xy^2z^3) = -24576\,b^6x^3y^4z^5$

[10] $(-2916\,bx^2y^2z^3) \cdot (729\,b^2xy^2z^3) = -2125764\,b^3x^3y^4z^6$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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

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

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

[10] $(-4\,x^2 - 4\,x) \cdot (3\,x^2 + 3\,x) = -12\,x^4 - 24\,x^3 - 12\,x^2$

[11] $(-2\,x) \cdot (-4\,x^2) = 8\,x^3$

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

[13] $(4\,x^2 - 3\,x) \cdot (4\,x^2 - 3\,x) = 16\,x^4 - 24\,x^3 + 9\,x^2$

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

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

[7] $(-x^2 + 4\,x) \cdot (4\,x^3 + 4\,x^2 - 4\,x) = -4\,x^5 + 12\,x^4 + 20\,x^3 - 16\,x^2$

[8] $(3\,x^3) \cdot (-3\,x^3 - 4\,x^2) = -9\,x^6 - 12\,x^5$

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

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

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

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

[13] $(-6\,x^2 - x) \cdot (5\,x^2 + 3\,x) = -30\,x^4 - 23\,x^3 - 3\,x^2$

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

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

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

[17] $(-x^3 - 4\,x) \cdot (-3\,x^3 + 5\,x) = 3\,x^6 + 7\,x^4 - 20\,x^2$

[18] $(5\,x^2) \cdot (-4\,x^3 + 2\,x) = -20\,x^5 + 10\,x^3$

[19] $(3\,x^3 - x) \cdot (3\,x^3 - 4\,x^2 + 3\,x) = 9\,x^6 - 12\,x^5 + 6\,x^4 + 4\,x^3 - 3\,x^2$

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

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

[1] $(4\,x^2y - 3\,xy) \cdot (-2\,x^2y^2 + 3\,x^2y) = -8\,x^4y^3 + 12\,x^4y^2 + 6\,x^3y^3 - 9\,x^3y^2$

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

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

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

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

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

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