1. Evaluación 1°D - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $\ 10\,x^2y - 2\,xy + -4\,x^2y^2 + 8\,x^2y + 24\,x^2y^2 - 16\,xy = 20\,x^2y^2 + 18\,x^2y - 18\,xy$

[4] $\ 18\,x^2y + 3\,xy^2 + -12\,x^2y^2 + 18\,xy^2 - 18\,xy + 18\,x^2y - 9\,xy^2 - 12\,xy = -12\,x^2y^2 + 36\,x^2y + 12\,xy^2 - 30\,xy$

[5] $\ 4\,x^2y^2 + 8\,x^2y + 16\,xy^2 + 32\,x^2y^2 - 16\,xy^2 + -8\,x^2y^2 - 12\,x^2y - 64\,xy = 28\,x^2y^2 - 4\,x^2y - 64\,xy$

[6] $\ 20\,x^2y^2 + 25\,x^2y - 50\,xy + 20\,x^2y^2 - 20\,xy^2 + 15\,xy + -20\,x^2y^2 + 50\,x^2y + 75\,xy = 20\,x^2y^2 + 75\,x^2y - 20\,xy^2 + 40\,xy$

[7] $\ 144\,x^2y^2 + -36\,x^2y - 12\,xy + 72\,x^2y^2 - 18\,x^2y + 36\,xy^2 = 216\,x^2y^2 - 54\,x^2y + 36\,xy^2 - 12\,xy$

[8] $\ 196\,x^2y^2 + 21\,x^2y + 98\,xy^2 + -21\,x^2y^2 - 14\,xy^2 + (-175\,x^2y^2 - 147\,xy^2) = 21\,x^2y - 63\,xy^2$

[9] $\ 16\,x^2y + 128\,xy^2 + 256\,xy + 64\,x^2y + 8\,xy^2 + 16\,xy + 16\,x^2y + 24\,xy^2 = 96\,x^2y + 160\,xy^2 + 272\,xy$

[10] $\ 81\,x^2y^2 - 342\,xy^2 + 405\,x^2y + 81\,xy + -324\,x^2y^2 + 36\,xy^2 - 243\,xy = -243\,x^2y^2 + 405\,x^2y - 306\,xy^2 - 162\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

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

[4] $\ -9\,x^2y^2 + 12\,xy^2 + 6\,xy - (18\,x^2y^2 + 27\,xy) + (-6\,x^2y^2 + 9\,xy^2 + 9\,xy) = -33\,x^2y^2 + 21\,xy^2 - 12\,xy$

[5] $\ -12\,x^2y - 16\,xy + -32\,x^2y^2 + 16\,xy^2 - 8\,xy - (12\,x^2y^2 - 12\,xy^2) = -44\,x^2y^2 - 12\,x^2y + 28\,xy^2 - 24\,xy$

[6] $35\,xy^2 + 50\,xy + 10\,x^2y^2 - 10\,xy^2 + 25\,xy - (5\,x^2y - 100\,xy) = 10\,x^2y^2 - 5\,x^2y + 25\,xy^2 + 175\,xy$

[7] $-252\,x^2y^2 - 108\,x^2y - (72\,x^2y^2 + 36\,x^2y + 144\,xy^2) + (-12\,x^2y^2 + 108\,xy^2 - 12\,xy) = -336\,x^2y^2 - 144\,x^2y - 36\,xy^2 - 12\,xy$

[8] $-14\,x^2y + 49\,xy^2 - 21\,xy + -49\,x^2y + 21\,xy - (-98\,x^2y^2 - 7\,xy^2) = 98\,x^2y^2 - 63\,x^2y + 56\,xy^2$

[9] $16\,x^2y^2 - 24\,x^2y - 32\,xy^2 + -256\,xy^2 + 184\,xy - (-192\,x^2y^2 + 8\,x^2y + 64\,xy^2) = 208\,x^2y^2 - 32\,x^2y - 352\,xy^2 + 184\,xy$

[10] $108\,x^2y^2 + 324\,x^2y - (-423\,x^2y^2) + (-324\,xy^2) = 531\,x^2y^2 + 324\,x^2y - 324\,xy^2$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-16\,bxyz) \cdot (-16\,b^3xyz^2) = 256\,b^4x^2y^2z^3$

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

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

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

[7] $(864\,b^3x^2y^3z^2) \cdot (6\,b^2x^2yz) = 5184\,b^5x^4y^4z^3$

[8] $(147\,b^2x^2yz^2) \cdot (-1372\,b^2x^2y^2z^2) = -201684\,b^4x^4y^3z^4$

[9] $(-2048\,bxy^3z^2) \cdot (-192\,b^3xyz) = 393216\,b^4x^2y^4z^3$

[10] $(-2916\,bx^2y^2z^2) \cdot (-243\,bx^2y^3z^2) = 708588\,b^2x^4y^5z^4$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

[1] $(3\,x^2) \cdot (4\,x^2 + 2\,x) = 12\,x^4 + 6\,x^3$

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

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

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

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

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

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

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

[9] $(-2\,x) \cdot (5\,x^2 + 6\,x) = -10\,x^3 - 12\,x^2$

[10] $(-3\,x^2) \cdot (-9\,x^2) = 27\,x^4$

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

[1] $(2\,x^2 + 4\,x) \cdot (4\,x^2 + x) = 8\,x^4 + 18\,x^3 + 4\,x^2$

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

[3] $(5\,x^2) \cdot (-5\,x^2 - 4\,x) = -25\,x^4 - 20\,x^3$

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

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

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

[7] $(-3\,x^2 + 2\,x) \cdot (4\,x^2 - 6\,x) = -12\,x^4 + 26\,x^3 - 12\,x^2$

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

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

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

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

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

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

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

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-9\,x) \cdot (-3\,x^3 + 2\,x^2) = 27\,x^4 - 18\,x^3$

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

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

[4] $(5\,x^3 - 4\,x^2) \cdot (-6\,x^2) = -30\,x^5 + 24\,x^4$

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

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

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

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

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

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

[11] $(-3\,x^3 - x^2) \cdot (x^3 - 2\,x^2 - 6\,x) = -3\,x^6 + 5\,x^5 + 20\,x^4 + 6\,x^3$

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

[13] $(-3\,x^2 + x) \cdot (6\,x^3 - 3\,x^2) = -18\,x^5 + 15\,x^4 - 3\,x^3$

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

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

[16] $(3\,x^3 + 5\,x) \cdot (-x^2 - 3\,x) = -3\,x^5 - 9\,x^4 - 5\,x^3 - 15\,x^2$

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

[18] $(3\,x^3 - 4\,x) \cdot (6\,x^3 + 3\,x^2 - x) = 18\,x^6 + 9\,x^5 - 27\,x^4 - 12\,x^3 + 4\,x^2$

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

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

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

[5] $(3\,x^2y^2 + 3\,x^2y) \cdot (4\,x^2y^2 + 8\,xy) = 12\,x^4y^4 + 12\,x^4y^3 + 24\,x^3y^3 + 24\,x^3y^2$

[6] $(-4\,x^2y - 4\,xy) \cdot (-4\,x^2y^2 - 3\,xy^2) = 16\,x^4y^3 + 28\,x^3y^3 + 12\,x^2y^3$

[7] $(4\,x^2y) \cdot (3\,x^2y^2 + 2\,x^2y - 3\,xy^2) = 12\,x^4y^3 + 8\,x^4y^2 - 12\,x^3y^3$