1. Evaluación 1°D - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

[3] $\quad 4\,x^3 + 2\,x + -4\,x^6 + 3\,x^3 + 4\,x + 7\,x = -4\,x^6 + 7\,x^3 + 13\,x$

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

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

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

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

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

[9] $\quad 8\,x^4 - 3\,x + -x^3 - 4\,x^2 - x + 3\,x^4 - 3\,x^3 = 11\,x^4 - 4\,x^3 - 4\,x^2 - 4\,x$

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $\quad 4\,x^2y^2 - 8\,x^2y + -16\,x^2y^2 - 2\,x^2y + (-16\,x^2y^2 - 8\,x^2y) = -28\,x^2y^2 - 18\,x^2y$

[4] $\quad 3\,x^2y - 27\,xy^2 + 9\,xy^2 + 48\,xy + 3\,xy^2 + 24\,xy = 3\,x^2y - 15\,xy^2 + 72\,xy$

[5] $\quad 20\,x^2y^2 + 48\,xy^2 + -56\,x^2y + 4\,xy + (-12\,x^2y^2 - 12\,xy^2) = 8\,x^2y^2 - 56\,x^2y + 36\,xy^2 + 4\,xy$

[6] $\quad 25\,x^2y^2 - 20\,xy^2 - 10\,xy + -105\,xy^2 - 20\,xy + 25\,x^2y^2 - 55\,xy = 50\,x^2y^2 - 125\,xy^2 - 85\,xy$

[7] $\quad 6\,x^2y^2 + 108\,x^2y + -12\,x^2y + 12\,xy + 36\,x^2y^2 + 138\,xy = 42\,x^2y^2 + 96\,x^2y + 150\,xy$

[8] $\quad 21\,x^2y^2 + 175\,xy + -147\,x^2y^2 - 14\,xy + -14\,x^2y^2 - 49\,x^2y - 14\,xy = -140\,x^2y^2 - 49\,x^2y + 147\,xy$

[9] $\quad 192\,xy^2 + 24\,xy + -224\,x^2y - 256\,xy + 240\,x^2y - 64\,xy^2 = 16\,x^2y + 128\,xy^2 - 232\,xy$

[10] $\quad 324\,x^2y - 153\,xy^2 + -9\,x^2y^2 - 243\,x^2y - 162\,xy^2 + 243\,x^2y^2 - 486\,x^2y = 234\,x^2y^2 - 405\,x^2y - 315\,xy^2$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $\quad -8\,x^2y + 4\,xy^2 + 12\,xy + -6\,xy^2 - 22\,xy - (24\,x^2y^2 + 4\,x^2y) = -24\,x^2y^2 - 12\,x^2y - 2\,xy^2 - 10\,xy$

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

[5] $\quad 28\,x^2y + 12\,xy^2 + -12\,x^2y + 8\,xy^2 - 12\,xy - (-48\,x^2y - 8\,xy^2) = 64\,x^2y + 28\,xy^2 - 12\,xy$

[6] $\quad -25\,x^2y^2 - 75\,xy^2 + 75\,xy + -80\,xy^2 + 75\,xy - (20\,x^2y^2) = -45\,x^2y^2 - 155\,xy^2 + 150\,xy$

[7] $-12\,x^2y^2-24\,x^2y+12\,xy-(-144\,x^2y^2+36\,x^2y-6\,xy^2)+(-72\,x^2y^2+6\,xy^2) = 60\,x^2y^2 - 60\,x^2y + 12\,xy^2 + 12\,xy$

[8] $28\,x^2y^2 - 77\,xy^2 + 77\,x^2y + 98\,xy - (-7\,x^2y^2 + 14\,x^2y + 21\,xy) = 35\,x^2y^2 + 63\,x^2y - 77\,xy^2 + 77\,xy$

[9] $64\,x^2y^2 - 8\,x^2y - 64\,xy^2 + -192\,x^2y^2 + 24\,xy - (-192\,x^2y^2 - 320\,xy) = 64\,x^2y^2 - 8\,x^2y - 64\,xy^2 + 344\,xy$

[10] $162\,xy^2 - 72\,xy - (18\,x^2y^2 + 36\,xy^2 - 81\,xy) + (162\,x^2y + 9\,xy^2 + 27\,xy) = -18\,x^2y^2 + 162\,x^2y + 135\,xy^2 + 36\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(-12\,bx^2yz^2) \cdot (-8\,b^2x^3yz) = 96\,b^3x^5y^2z^3$

[4] $(81\,b^2xy^3z) \cdot (-6\,b^3x^3y^3z^2) = -486\,b^5x^4y^6z^3$

[5] $(-256\,b^2x^2yz^2) \cdot (-256\,b^3x^2yz^2) = 65536\,b^5x^4y^2z^4$

[6] $(5\,bxyz^2) \cdot (375\,bxy^2z) = 1875\,b^2x^2y^3z^3$

[7] $(-144\,b^2xyz) \cdot (648\,b^2x^3y^3z) = -93312\,b^4x^4y^4z^2$

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

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

[10] $(81\,bx^2y^3z) \cdot (-81\,b^2xy^3z) = -6561\,b^3x^3y^6z^2$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

[1] $(0) \cdot (-7\,x) = 0$

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

[3] $(-5\,x) \cdot (-5\,x^2 - 3\,x) = 25\,x^3 + 15\,x^2$

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

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

[6] $(5\,x^2) \cdot (0) = 0$

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

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

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

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

[11] $(0) \cdot (-7\,x^2 + 3\,x) = 0$

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

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

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

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-5\,x^3 + 2\,x) \cdot (-2\,x^3 + 2\,x) = 10\,x^6 - 14\,x^4 + 4\,x^2$

[2] $(0) \cdot (-8\,x^2 - x) = 0$

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

[4] $(-5\,x^3 - 3\,x) \cdot (-2\,x^3 - x^2 - 3\,x) = 10\,x^6 + 5\,x^5 + 21\,x^4 + 3\,x^3 + 9\,x^2$

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

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

[7] $(6\,x^2 + 3\,x) \cdot (5\,x^3 + x^2) = 30\,x^5 + 21\,x^4 + 3\,x^3$

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

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

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

[11] $(-6\,x) \cdot (-7\,x^3 + x^2) = 42\,x^4 - 6\,x^3$

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

[13] $(-3\,x^3 + 2\,x) \cdot (-3\,x^3 + 4\,x^2 - 2\,x) = 9\,x^6 - 12\,x^5 + 8\,x^3 - 4\,x^2$

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

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

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

[17] $(0) \cdot (-3\,x^3 - 4\,x^2 + 7\,x) = 0$

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

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

[20] $(-2\,x^3 - 4\,x^2) \cdot (-x^3 + 4\,x^2 - 3\,x) = 2\,x^6 - 4\,x^5 - 10\,x^4 + 12\,x^3$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

[6] $(-8\,x^2y) \cdot (5\,xy^2 + 3\,xy) = -40\,x^3y^3 - 24\,x^3y^2$

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