1. Evaluación 1°D - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

[1] $x^4 - 3x^3 - 4x^2 + -5x^6 + x^2 + 4x^6 - 8x^2 = -x^6 + x^4 - 3x^3 - 11x^2$

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

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

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

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

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

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

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

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

[10] $2x^6 + 3x^5 + x + -5x^2 + 3x + (-3x^5 - x^2 + 3x) = 2x^6 - 6x^2 + 7x$

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $-20x^2y^2 - 2xy^2 + (-6x^2y + 8xy^2) + (-8x^2y^2 - 4x^2y) = -28x^2y^2 - 10x^2y + 6xy^2$

[4] $6x^2y + 9xy + 18x^2y^2 + 18xy + -27x^2y^2 - 9x^2y - 3xy = -9x^2y^2 - 3x^2y + 24xy$

[5] $12x^2y^2 - 16x^2y - 16xy^2 + -32x^2y - 60xy^2 + -64x^2y^2 + 12xy^2 - 16xy = -52x^2y^2 - 48x^2y - 64xy^2 - 16xy$

[6] $25x^2y^2 + 10xy^2 + 5xy + -150x^2y^2 + 50xy + 120x^2y - 50xy = -125x^2y^2 + 120x^2y + 10xy^2 + 5xy$

[7] $90x^2y - 12xy + -18x^2y^2 - 6x^2y + 108xy^2 + (-24x^2y^2 - 108x^2y) = -42x^2y^2 - 24x^2y + 108xy^2 - 12xy$

[8] $21x^2y + -49x^2y^2 - 98x^2y + 49xy^2 + 49xy^2 = -49x^2y^2 - 77x^2y + 98xy^2$

[9] $192x^2y^2 + 64x^2y - 16xy^2 + -72x^2y - 24xy + (-24x^2y^2 + 8xy^2) = 168x^2y^2 - 8x^2y - 8xy^2 - 24xy$

[10] $-27x^2y^2 - 162xy^2 - 9xy + (-261x^2y^2 + 243x^2y) + (-243x^2y^2 + 243x^2y + 18xy^2) = -531x^2y^2 + 486x^2y - 144xy^2 - 9xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

[3] $6x^2y + 2xy^2 - 4xy + 20x^2y + 16xy - (-2xy^2 + 8xy) = 26x^2y + 4xy^2 + 4xy$

[4] $9xy^2 + 6xy - (39xy^2) + (21xy^2) = -9xy^2 + 6xy$

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

[6] $-100x^2y^2 + 75xy^2 - 25xy + 100x^2y + 50xy^2 - (-20x^2y + 10xy^2 - 25xy) = -100x^2y^2 + 120x^2y + 115xy^2$

[7] $\quad -132\,x^2y^2 + 36\,xy^2 - (-144\,x^2y^2 + 24\,x^2y + 6\,xy) + (6\,x^2y^2 - 18\,xy^2 - 12\,xy) = 18\,x^2y^2 - 24\,x^2y + 18\,xy^2 - 18\,xy$

[8] $\quad 49\,x^2y^2 + 49\,x^2y + -98\,x^2y + 28\,xy - (-14\,x^2y^2 + 56\,xy) = 63\,x^2y^2 - 49\,x^2y - 28\,xy$

[9] $\quad 88\,x^2y + 256\,xy^2 + 32\,xy^2 - 24\,xy - (24\,x^2y^2 - 24\,x^2y - 32\,xy^2) = -24\,x^2y^2 + 112\,x^2y + 320\,xy^2 - 24\,xy$

[10] $\quad 243\,x^2y - 18\,xy^2 - (162\,x^2y^2 - 243\,x^2y) + (-162\,x^2y^2 - 9\,xy^2 + 36\,xy) = -324\,x^2y^2 + 486\,x^2y - 27\,xy^2 + 36\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $\quad (-4\,b^3x^3y^2z^2)\cdot(-24\,b^3x^2y^3z^2) = 96\,b^6x^5y^5z^4$

[4] $\quad (54\,bxyz^2)\cdot(-3\,b^2xyz) = -162\,b^3x^2y^2z^3$

[5] $\quad (-8\,bx^3y^3z)\cdot(16\,bx^3yz) = -128\,b^2x^6y^4z^2$

[6] $\quad (-25\,b^3x^2y^3z^3)\cdot(-25\,bx^2yz^3) = 625\,b^4x^4y^4z^6$

[7] $\quad (-108\,bx^3yz^3)\cdot(-12\,b^3x^2y^3z^3) = 1296\,b^4x^5y^4z^6$

[8] $\quad (147\,bxyz^2)\cdot(14\,b^3x^3yz^2) = 2058\,b^4x^4y^2z^4$

[9] $\quad (-24\,b^3x^3y^2z^3)\cdot(256\,b^3x^3y^3z^3) = -6144\,b^6x^6y^5z^6$

[10] $\quad (2187\,bx^2y^3z^3)\cdot(1458\,b^3xy^2z) = 3188646\,b^4x^3y^5z^4$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

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

[3] $\quad (3\,x)\cdot(-3\,x^2 + 7\,x) = -9\,x^3 + 21\,x^2$

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

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

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

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

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

[2] $\quad (0)\cdot(0) = 0$

[3] $\quad (8\,x)\cdot(-x^2 + 5\,x) = -8\,x^3 + 40\,x^2$

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

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

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

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

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

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

[10] $(-3\,x) \cdot (-7\,x^2 - x) = 21\,x^3 + 3\,x^2$

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

[12] $(-2\,x^2) \cdot (-9\,x) = 18\,x^3$

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

[14] $(7\,x) \cdot (-4\,x^2 - 6\,x) = -28\,x^3 - 42\,x^2$

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(5\,x^3 - 2\,x^2) \cdot (-5\,x^3 - 3\,x) = -25\,x^6 + 10\,x^5 - 15\,x^4 + 6\,x^3$

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

[3] $(-8\,x) \cdot (-x^3 - 4\,x^2 + 7\,x) = 8\,x^4 + 32\,x^3 - 56\,x^2$

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

[5] $(-2\,x^3 - 3\,x) \cdot (-2\,x^3 - x^2 + 8\,x) = 4\,x^6 + 2\,x^5 - 10\,x^4 + 3\,x^3 - 24\,x^2$

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

[7] $(-2\,x^3 + 4\,x^2 + 3\,x) \cdot (-4\,x^2 - x) = 8\,x^5 - 14\,x^4 - 16\,x^3 - 3\,x^2$

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

[9] $(-7\,x^3) \cdot (-4\,x^2 + 4\,x) = 28\,x^5 - 28\,x^4$

[10] $(-4\,x^3 + 3\,x) \cdot (-3\,x^3 - 6\,x^2) = 12\,x^6 + 24\,x^5 - 9\,x^4 - 18\,x^3$

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

[12] $(-7\,x^3) \cdot (6\,x^3 + 3\,x^2) = -42\,x^6 - 21\,x^5$

[13] $(-3\,x^3 - 5\,x^2) \cdot (-3\,x^3 - 2\,x^2 - x) = 9\,x^6 + 21\,x^5 + 13\,x^4 + 5\,x^3$

[14] $(x^3 - 4\,x) \cdot (-x^3 + 2\,x^2 + 7\,x) = -x^6 + 2\,x^5 + 11\,x^4 - 8\,x^3 - 28\,x^2$

[15] $(4\,x^3) \cdot (x^3 - 4\,x) = 4\,x^6 - 16\,x^4$

[16] $(-3\,x^3 - 7\,x) \cdot (2\,x^3 - 5\,x^2) = -6\,x^6 + 15\,x^5 - 14\,x^4 + 35\,x^3$

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

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

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

[20] $(x^3 + 3\,x^2) \cdot (-2\,x^3 - 4\,x^2 - 6\,x) = -2\,x^6 - 10\,x^5 - 18\,x^4 - 18\,x^3$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

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