1. Evaluación 1°D - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

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

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

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

[4] $15xy^2 - 12xy + -45x^2y - 9xy + -18x^2y + 9xy^2 - 18xy = -63x^2y + 24xy^2 - 39xy$

[5] $8x^2y^2 + 72xy + -16x^2y^2 + 48x^2y + 12x^2y^2 + 4xy^2 + 48xy = 4x^2y^2 + 48x^2y + 4xy^2 + 120xy$

[6] $75x^2y^2 + 15x^2y - 75xy + -75x^2y^2 + 25x^2y + 15xy + 20x^2y^2 + 120x^2y = 20x^2y^2 + 160x^2y - 60xy$

[7] $36x^2y^2 + 6xy^2 + -72x^2y^2 - 108x^2y + 6xy^2 + 72x^2y - 36xy^2 = -36x^2y^2 - 36x^2y - 24xy^2$

[8] $49x^2y^2 + 98xy + 7x^2y^2 + 196x^2y + 196xy + 147xy^2 = 56x^2y^2 + 196x^2y + 147xy^2 + 294xy$

[9] $256x^2y^2 + 256xy^2 - 64xy + -64x^2y - 184xy + -24x^2y^2 - 32xy^2 = 232x^2y^2 - 64x^2y + 224xy^2 - 248xy$

[10] $243x^2y^2 - 81x^2y + 27xy^2 + 81x^2y + 18x^2y - 81xy^2 = 243x^2y^2 + 18x^2y - 54xy^2$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

[2] $x^2y - 5xy^2 + 3x^2y - 2xy^2 - (3x^2y^2 + 5x^2y) = -3x^2y^2 - x^2y - 7xy^2$

[3] $-4x^2y^2 + 8xy^2 + 8x^2y + 6xy^2 - 6xy - (26x^2y^2) = -30x^2y^2 + 8x^2y + 14xy^2 - 6xy$

[4] $9x^2y^2 - 48xy - (-18x^2y - 6xy) + (-39x^2y^2 - 36xy^2) = -30x^2y^2 + 18x^2y - 36xy^2 - 42xy$

[5] $-48x^2y^2 - 16xy^2 + -12x^2y^2 + 16xy^2 + 12xy - (-32xy^2 - 32xy) = -60x^2y^2 + 32xy^2 + 44xy$

[6] $75\,x^2y^2 + 50\,xy^2 + 50\,xy + 100\,x^2y^2 + 75\,xy^2 - 75\,xy - (-15\,x^2y^2) = 190\,x^2y^2 +$ $125\,xy^2 - 25\,xy$

[7] $84\,x^2y - (174\,x^2y^2) + (72\,x^2y^2 + 102\,xy^2) = -102\,x^2y^2 + 84\,x^2y + 102\,xy^2$

[8] $-98\,xy^2 - 224\,xy + 196\,x^2y^2 - (-49\,x^2y + 21\,xy^2 + 196\,xy) = 196\,x^2y^2 +$ $49\,x^2y - 119\,xy^2 - 420\,xy$

[9] $-160\,x^2y^2 - 24\,xy + 144\,x^2y^2 + 192\,xy^2 - (-104\,x^2y^2 + 24\,xy) = 88\,x^2y^2 +$ $192\,xy^2 - 48\,xy$

[10] $243\,x^2y^2 + 306\,xy - (216\,x^2y - 27\,xy) + (27\,x^2y^2 + 126\,x^2y) = 270\,x^2y^2 -$ $90\,x^2y + 333\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

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

[4] $(108\,bx^3yz^3) \cdot (-9\,b^2xyz^2) = -972\,b^3x^4y^2z^5$

[5] $(-16\,bxy^3z) \cdot (-16\,bxyz^2) = 256\,b^2x^2y^4z^3$

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

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

[8] $(147\,b^2x^3y^2z^2) \cdot (-7\,b^3x^3y^2z) = -1029\,b^5x^6y^4z^3$

[9] $(-192\,b^2x^3y^3z) \cdot (128\,b^2xy^3z^2) = -24576\,b^4x^4y^6z^3$

[10] $(-2187\,b^2x^3yz^3) \cdot (2187\,bxyz^3) = -4782969\,b^3x^4y^2z^6$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-2\,x) \cdot (10\,x^2 + 3\,x) = -20\,x^3 - 6\,x^2$

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

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

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

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

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

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

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

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

[3] $(0) \cdot (-4\,x^2 - 5\,x) = 0$

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

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

[6] $(-5\,x^2) \cdot (-5\,x^2) = 25\,x^4$

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

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

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

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

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

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

[13] $(5\,x^2)\cdot(-2\,x^2-3\,x)=-10\,x^4-15\,x^3$

[14] $(-3\,x^2-3\,x)\cdot(3\,x^2-3\,x)=-9\,x^4+9\,x^2$

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

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-2\,x^3+3\,x^2-3\,x)\cdot(-2\,x^2+5\,x)=4\,x^5-16\,x^4+21\,x^3-15\,x^2$

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

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

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

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

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

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

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

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

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

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

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

[13] $(-4\,x^3-5\,x^2)\cdot(5\,x^3+2\,x^2)=-20\,x^6-33\,x^5-10\,x^4$

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

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

[16] $(-4\,x^3+8\,x^2)\cdot(-3\,x^3)=12\,x^6-24\,x^5$

[17] $(-4\,x^3-4\,x^2)\cdot(4\,x^3-2\,x^2+x)=-16\,x^6-8\,x^5+4\,x^4-4\,x^3$

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

[19] $(-7\,x^3-x^2)\cdot(2\,x^3-4\,x^2+3\,x)=-14\,x^6+26\,x^5-17\,x^4-3\,x^3$

[20] $(-2\,x^2+4\,x)\cdot(3\,x^2-6\,x)=-6\,x^4+24\,x^3-24\,x^2$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

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

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

[3] $(-3\,x^2y-2\,xy^2)\cdot(4\,x^2y^2+4\,x^2y+3\,xy^2)=-12\,x^4y^3-8\,x^3y^4-12\,x^4y^2-17\,x^3y^3-6\,x^2y^4$

[4] $(-3\,x^2y^2+4\,xy)\cdot(-8\,x^2y+3\,xy^2)=24\,x^4y^3-9\,x^3y^4-32\,x^3y^2+12\,x^2y^3$

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

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

[7] $(7\,x^2y^2)\cdot(-4\,xy^2+5\,xy)=-28\,x^3y^4+35\,x^3y^3$