1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

[5] $-2\,x^5 - 3\,x^2 - 3\,x + (-x^6 + 3\,x^3 + 2\,x^2) + (-7\,x^5 + 4\,x^2) = -x^6 - 9\,x^5 + 3\,x^3 + 3\,x^2 - 3\,x$

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

[7] $9\,x^3 + -4\,x^6 + 2\,x^5 - 4\,x + (-2\,x^6 - 4\,x^4 + 4\,x^2) = -6\,x^6 + 2\,x^5 - 4\,x^4 + 9\,x^3 + 4\,x^2 - 4\,x$

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

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

[3] $12\,x^2y^2 + 4\,x^2y + 12\,xy + -16\,x^2y^2 - 16\,xy^2 + 8\,xy + -16\,x^2y = -4\,x^2y^2 - 12\,x^2y - 16\,xy^2 + 20\,xy$

[4] $36\,x^2y^2 - 12\,xy^2 + -3\,x^2y + 6\,xy^2 - 18\,xy + -12\,x^2y - 9\,xy = 36\,x^2y^2 - 15\,x^2y - 6\,xy^2 - 27\,xy$

[5] $60\,x^2y^2 - 64\,x^2y + -92\,xy + (-32\,x^2y^2 + 48\,x^2y + 64\,xy^2) = 28\,x^2y^2 - 16\,x^2y + 64\,xy^2 - 92\,xy$

[6] $120\,x^2y^2 + 15\,xy^2 + -10\,x^2y^2 - 100\,xy + (-85\,x^2y^2 - 100\,xy^2) = 25\,x^2y^2 - 85\,xy^2 - 100\,xy$

[7] $102\,xy^2 + 12\,xy + -144\,x^2y - 54\,xy^2 + -18\,x^2y^2 + 180\,xy = -18\,x^2y^2 - 144\,x^2y + 48\,xy^2 + 192\,xy$

[8] $14\,x^2y^2 - 98\,x^2y + 7\,xy + -7\,x^2y + 14\,xy^2 + 196\,xy + -140\,xy^2 = 14\,x^2y^2 - 105\,x^2y - 126\,xy^2 + 203\,xy$

[9] $-64\,xy^2 + 272\,xy + (-120\,x^2y^2 - 32\,xy) + (-24\,x^2y - 248\,xy) = -120\,x^2y^2 - 24\,x^2y - 64\,xy^2 - 8\,xy$

[10] $27\,x^2y + 18\,xy + -162\,x^2y^2 - 162\,x^2y + 81\,x^2y - 243\,xy^2 - 81\,xy = -162\,x^2y^2 - 54\,x^2y - 243\,xy^2 - 63\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

[2] $4\,x^2y^2 + 0 - (-7\,x^2y^2 + xy) = 11\,x^2y^2 - xy$

[3] $-2\,x^2y^2 + 10\,xy^2 + -12\,xy^2 - (14\,x^2y^2 + 4\,xy) = -16\,x^2y^2 - 2\,xy^2 - 4\,xy$

[4] $27\,x^2y^2 - 21\,x^2y - (-18\,x^2y + 3\,xy) + (3\,x^2y^2 - 6\,x^2y - 18\,xy^2) = 30\,x^2y^2 - 9\,x^2y - 18\,xy^2 - 3\,xy$

[5] $-32\,x^2y^2 - 64\,xy^2 - 16\,xy + 16\,x^2y^2 - 48\,xy^2 + 4\,xy - (32\,x^2y^2 - 48\,x^2y) = -48\,x^2y^2 + 48\,x^2y - 112\,xy^2 - 12\,xy$

[6] $50\,x^2y^2 - 20\,x^2y - 5\,xy^2 + -10\,x^2y^2 + 15\,xy^2 - 50\,xy - (10\,x^2y^2 + 50\,x^2y - 25\,xy) = 30\,x^2y^2 - 70\,x^2y + 10\,xy^2 - 25\,xy$

[7] $114\,x^2y^2 + 36\,xy - (-168\,xy^2) + (-18\,x^2y + 24\,xy) = 114\,x^2y^2 - 18\,x^2y + 168\,xy^2 + 60\,xy$

[8] $7\,x^2y^2 + 21\,x^2y - 21\,xy + -28\,x^2y - 7\,xy^2 - (-28\,x^2y^2 + 49\,xy) = 35\,x^2y^2 - 7\,x^2y - 7\,xy^2 - 70\,xy$

[9] $-32\,x^2y + -192\,x^2y + 224\,xy^2 - (192\,xy^2) = -224\,x^2y + 32\,xy^2$

[10] $-162\,x^2y^2 + 81\,x^2y + 324\,xy - (279\,x^2y^2 - 27\,x^2y) + (-99\,x^2y^2 + 324\,xy^2) = -540\,x^2y^2 + 108\,x^2y + 324\,xy^2 + 324\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

[3] $(12\,b^3xyz^3) \cdot (12\,bxy^2z^3) = 144\,b^4x^2y^3z^6$

[4] $(6\,b^3x^2yz^3) \cdot (-18\,bx^3y^3z) = -108\,b^4x^5y^4z^4$

[5] $(-64\,b^3x^3yz^3) \cdot (-32\,bx^2yz^3) = 2048\,b^4x^5y^2z^6$

[6] $(-375\,b^3x^2y^3z^3) \cdot (50\,b^2xy^3z^3) = -18750\,b^5x^3y^6z^6$

[7] $(-72\,bxy^3z^2) \cdot (36\,b^3x^2y^2z^3) = -2592\,b^4x^3y^5z^5$

[8] $(-49\,bxy^3z^3) \cdot (-1372\,b^2x^3y^3z^2) = 67228\,b^3x^4y^6z^5$

[9] $(-8\,b^3x^2yz) \cdot (-2048\,b^3x^2y^3z) = 16384\,b^6x^4y^4z^2$

[10] $(-2187\,b^2x^3y^2z^3) \cdot (9\,b^2x^2yz^3) = -19683\,b^4x^5y^3z^6$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

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

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

[7] $(-3\,x^2) \cdot (-7\,x^2 - 3\,x) = 21\,x^4 + 9\,x^3$

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

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

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

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

[1] $(4\,x^2 + x) \cdot (6\,x^2) = 24\,x^4 + 6\,x^3$

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

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

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

[5] $(2\,x^2 - 4\,x) \cdot (8\,x^2) = 16\,x^4 - 32\,x^3$

[6] $(-3\,x^2-3\,x)\cdot(3\,x^2-4\,x)=-9\,x^4+3\,x^3+12\,x^2$
[7] $(3\,x^2+3\,x)\cdot(x^2+7\,x)=3\,x^4+24\,x^3+21\,x^2$
[8] $(-6\,x)\cdot(6\,x^2-x)=-36\,x^3+6\,x^2$
[9] $(x^2-4\,x)\cdot(-6\,x^2-2\,x)=-6\,x^4+22\,x^3+8\,x^2$
[10] $(6\,x)\cdot(-6\,x^2+x)=-36\,x^3+6\,x^2$
[11] $(-x^2+2\,x)\cdot(x^2-2\,x)=-x^4+4\,x^3-4\,x^2$
[12] $(3\,x)\cdot(x^2)=3\,x^3$
[13] $(4\,x^2+2\,x)\cdot(x^2+x)=4\,x^4+6\,x^3+2\,x^2$
[14] $(-6\,x^2)\cdot(-3\,x^2-7\,x)=18\,x^4+42\,x^3$
[15] $(2\,x^2-2\,x)\cdot(-5\,x^2)=-10\,x^4+10\,x^3$

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(x^3-3\,x^2)\cdot(-8\,x^3)=-8\,x^6+24\,x^5$
[2] $(-3\,x^3-3\,x^2)\cdot(-x^3-4\,x^2-x)=3\,x^6+15\,x^5+15\,x^4+3\,x^3$
[3] $(-x^2-2\,x)\cdot(-3\,x^3+2\,x^2-x)=3\,x^5+4\,x^4-3\,x^3+2\,x^2$
[4] $(-4\,x^2-3\,x)\cdot(2\,x)=-8\,x^3-6\,x^2$
[5] $(-6\,x^2)\cdot(-7\,x^3)=42\,x^5$
[6] $(-2\,x^2+x)\cdot(3\,x^3-2\,x^2+3\,x)=-6\,x^5+7\,x^4-8\,x^3+3\,x^2$
[7] $(-3\,x^3+3\,x^2-2\,x)\cdot(4\,x^3)=-12\,x^6+12\,x^5-8\,x^4$
[8] $(-3\,x^3+4\,x^2)\cdot(2\,x^2-4\,x)=-6\,x^5+20\,x^4-16\,x^3$
[9] $(x^2+4\,x)\cdot(-2\,x)=-2\,x^3-8\,x^2$
[10] $(6\,x^2-x)\cdot(6\,x^2)=36\,x^4-6\,x^3$
[11] $(2\,x^3-2\,x^2)\cdot(-x^3-4\,x^2+3\,x)=-2\,x^6-6\,x^5+14\,x^4-6\,x^3$
[12] $(-2\,x^3+3\,x)\cdot(-x^3-3\,x^2)=2\,x^6+6\,x^5-3\,x^4-9\,x^3$
[13] $(-x^3+x^2-2\,x)\cdot(4\,x^3-4\,x^2+2\,x)=-4\,x^6+8\,x^5-14\,x^4+10\,x^3-4\,x^2$
[14] $(3\,x^2-2\,x)\cdot(-3\,x^3+x)=-9\,x^5+6\,x^4+3\,x^3-2\,x^2$
[15] $(x^3-3\,x^2)\cdot(2\,x^3+4\,x^2+x)=2\,x^6-2\,x^5-11\,x^4-3\,x^3$
[16] $(4\,x)\cdot(2\,x^3+x^2)=8\,x^4+4\,x^3$
[17] $(0)\cdot(3\,x^3+3\,x)=0$
[18] $(6\,x^2)\cdot(-x^2-6\,x)=-6\,x^4-36\,x^3$
[19] $(4\,x^3+3\,x^2+3\,x)\cdot(2\,x^2)=8\,x^5+6\,x^4+6\,x^3$
[20] $(0)\cdot(-x^3+2\,x^2)=0$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-2\,xy^2+4\,xy)\cdot(-xy^2+xy)=2\,x^2y^4-6\,x^2y^3+4\,x^2y^2$
[2] $(4\,x^2y^2+4\,x^2y)\cdot(-2\,x^2y^2-2\,xy^2-xy)=-8\,x^4y^4-8\,x^4y^3-8\,x^3y^4-12\,x^3y^3-4\,x^3y^2$
[3] $(-3\,x^2y^2+3\,xy^2)\cdot(-7\,xy^2-4\,xy)=21\,x^3y^4+12\,x^3y^3-21\,x^2y^4-12\,x^2y^3$
[4] $(4\,x^2y^2-x^2y)\cdot(2\,x^2y^2+2\,x^2y)=8\,x^4y^4+6\,x^4y^3-2\,x^4y^2$
[5] $(xy^2-4\,xy)\cdot(-3\,x^2y^2+2\,x^2y)=-3\,x^3y^4+14\,x^3y^3-8\,x^3y^2$
[6] $(-2\,x^2y^2-2\,x^2y)\cdot(-2\,x^2y-4\,xy^2)=4\,x^4y^3+8\,x^3y^4+4\,x^4y^2+8\,x^3y^3$
[7] $(2\,xy^2-xy)\cdot(x^2y+3\,xy^2-xy)=2\,x^3y^3+6\,x^2y^4-x^3y^2-5\,x^2y^3+x^2y^2$