1. Evaluación 1ºD - Funciones

Ejercicio 1: Realiza las siguientes sumas de polinomios:

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

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

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

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

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

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

[7] $3\,x^6 - x^5 - 4\,x^4 + x^6 - x^4 + 4\,x^6 - 2\,x^2 - 2\,x = 8\,x^6 - x^5 - 5\,x^4 - 2\,x^2 - 2\,x$

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

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

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

Ejercicio 2: Realiza las siguientes sumas de polinomios:

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

[2] $2\,x^2y^2 - 5\,xy^2 + -xy^2 - 8\,xy + 3\,x^2y^2 + 3\,xy^2 - xy = 5\,x^2y^2 - 3\,xy^2 - 9\,xy$

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

[4] $27\,x^2y^2 + 9\,x^2y - 36\,xy^2 + 30\,x^2y + 18\,xy + -3\,x^2y^2 - 36\,xy^2 + 12\,xy = 24\,x^2y^2 + 39\,x^2y - 72\,xy^2 + 30\,xy$

[5] $12\,x^2y^2 - 8\,x^2y - 4\,xy^2 + -16\,x^2y^2 - 12\,xy + -80\,x^2y + 48\,xy^2 = -4\,x^2y^2 - 88\,x^2y + 44\,xy^2 - 12\,xy$

[6] $25\,x^2y + -20\,x^2y^2 + 50\,x^2y - 75\,xy^2 + -100\,x^2y - 110\,xy = -20\,x^2y^2 - 25\,x^2y - 75\,xy^2 - 110\,xy$

[7] $72\,x^2y^2 - 24\,xy + -18\,x^2y^2 - 36\,xy^2 + -6\,x^2y^2 + 24\,xy^2 + 18\,xy = 48\,x^2y^2 - 12\,xy^2 - 6\,xy$

[8] $168\,x^2y - 7\,xy^2 + -21\,x^2y^2 - 28\,x^2y - 21\,xy^2 + 21\,x^2y^2 + 196\,x^2y + 7\,xy^2 = 336\,x^2y - 21\,xy^2$

[9] $16\,x^2y + 256\,xy^2 - 32\,xy + 288\,x^2y - 16\,xy^2 + -32\,x^2y^2 - 192\,x^2y - 256\,xy^2 = -32\,x^2y^2 + 112\,x^2y - 16\,xy^2 - 32\,xy$

[10] $486\,xy^2 - 36\,xy + -405\,x^2y + 243\,xy + -18\,x^2y - 243\,xy^2 = -423\,x^2y + 243\,xy^2 + 207\,xy$

Ejerciio 3 Realiza las siguientes sumas y restas de polinomios:

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

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

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

[4] $36\,x^2y - (-9\,x^2y^2 - 27\,xy^2 - 9\,xy) + (-6\,x^2y - 18\,xy^2) = 9\,x^2y^2 + 30\,x^2y + 9\,xy^2 + 9\,xy$

[5] $-12\,x^2y^2 + 60\,xy^2 + -4\,x^2y + 16\,xy^2 + 16\,xy - (20\,x^2y + 16\,xy) = -12\,x^2y^2 - 24\,x^2y + 76\,xy^2$

[6] $-50\,x^2y + -50\,x^2y - 10\,xy^2 + 25\,xy - (25\,x^2y^2 - 5\,xy) = -25\,x^2y^2 - 100\,x^2y - 10\,xy^2 + 30\,xy$

[7] $-24\,x^2y^2 + 18\,xy^2 - (-108\,x^2y^2) + (66\,x^2y^2 + 6\,x^2y) = 150\,x^2y^2 + 6\,x^2y + 18\,xy^2$

[8] $-98\,xy^2 + -7\,x^2y^2 - 91\,xy - (-7\,x^2y^2 - 21\,x^2y + 49\,xy^2) = 21\,x^2y - 147\,xy^2 - 91\,xy$

[9] $-192\,xy^2 - 272\,xy + -480\,x^2y^2 - (192\,x^2y^2 - 64\,xy^2 + 16\,xy) = -672\,x^2y^2 - 128\,xy^2 - 288\,xy$

[10] $27\,x^2y^2 - 18\,x^2y - (81\,x^2y^2 - 81\,x^2y + 9\,xy) + (18\,xy^2 - 81\,xy) = -54\,x^2y^2 + 63\,x^2y + 18\,xy^2 - 90\,xy$

Ejercicio 3: Realiza las siguientes multiplicaciones de monomios:

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

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

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

[4] $(27\,b^3x^2yz) \cdot (-18\,bx^2y^2z^3) = -486\,b^4x^4y^3z^4$

[5] $(192\,b^3x^3y^2z) \cdot (4\,b^3x^3y^2z^3) = 768\,b^6x^6y^4z^4$

[6] $(-75\,b^2x^3yz) \cdot (5\,b^2x^3yz^3) = -375\,b^4x^6y^2z^4$

[7] $(-72\,bx^3y^2z) \cdot (-12\,b^3xyz) = 864\,b^4x^4y^3z^2$

[8] $(21\,bx^3y^2z^2) \cdot (686\,bx^3y^2z) = 14406\,b^2x^6y^4z^3$

[9] $(24\,b^2xy^2z^3) \cdot (32\,b^2x^2yz^2) = 768\,b^4x^3y^3z^5$

[10] $(18\,b^2x^2y^3z) \cdot (-81\,b^3x^3y^2z^3) = -1458\,b^5x^5y^5z^4$

Ejercicio 4: Realiza las siguientes multiplicaciones de polinomios:

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

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

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

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

[5] $(3\,x) \cdot (x^2 + 10\,x) = 3\,x^3 + 30\,x^2$

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

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

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

[9] $(-4\,x) \cdot (-10\,x^2 + 3\,x) = 40\,x^3 - 12\,x^2$

[10] $(3\,x) \cdot (10\,x^2 - x) = 30\,x^3 - 3\,x^2$

Ejercicio 5: Realiza las siguientes multiplicaciones de polinomios:

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

[2] $(4\,x^2 - 4\,x) \cdot (3\,x^2 - 6\,x) = 12\,x^4 - 36\,x^3 + 24\,x^2$

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

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

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

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

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

[8] $(3\,x^2-4\,x)\cdot(-2\,x^2+5\,x)=-6\,x^4+23\,x^3-20\,x^2$

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

[10] $(-2\,x^2-2\,x)\cdot(-7\,x)=14\,x^3+14\,x^2$

[11] $(4\,x)\cdot(-x^2+4\,x)=-4\,x^3+16\,x^2$

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

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

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

[15] $(-4\,x)\cdot(8\,x^2+3\,x)=-32\,x^3-12\,x^2$

Ejercicio 6: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-x^2+3\,x)\cdot(2\,x^3-4\,x^2-4\,x)=-2\,x^5+10\,x^4-8\,x^3-12\,x^2$

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

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

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

[5] $(-4\,x^3-x^2)\cdot(x^3+3\,x^2+6\,x)=-4\,x^6-13\,x^5-27\,x^4-6\,x^3$

[6] $(-4\,x^2-4\,x)\cdot(5\,x^2+4\,x)=-20\,x^4-36\,x^3-16\,x^2$

[7] $(-4\,x^3-4\,x^2)\cdot(-4\,x^3+3\,x)=16\,x^6+16\,x^5-12\,x^4-12\,x^3$

[8] $(4\,x^2+2\,x)\cdot(-5\,x^3+x^2)=-20\,x^5-6\,x^4+2\,x^3$

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

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

[11] $(-2\,x^3-x)\cdot(-5\,x^3+4\,x)=10\,x^6-3\,x^4-4\,x^2$

[12] $(2\,x^2-2\,x)\cdot(-4\,x^2+x)=-8\,x^4+10\,x^3-2\,x^2$

[13] $(2\,x^2-6\,x)\cdot(2\,x^3+4\,x^2-4\,x)=4\,x^5-4\,x^4-32\,x^3+24\,x^2$

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

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

[16] $(-4\,x^3+3\,x^2)\cdot(3\,x)=-12\,x^4+9\,x^3$

[17] $(4\,x^3-3\,x)\cdot(2\,x^3+4\,x^2-x)=8\,x^6+16\,x^5-10\,x^4-12\,x^3+3\,x^2$

[18] $(-8\,x)\cdot(-2\,x^3-10\,x^2)=16\,x^4+80\,x^3$

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

[20] $(3\,x^3-4\,x)\cdot(x^3-2\,x)=3\,x^6-10\,x^4+8\,x^2$

Ejercicio 7: Realiza las siguientes multiplicaciones de polinomios:

[1] $(-3\,x^2y-2\,xy)\cdot(-3\,x^2y^2-4\,x^2y+xy)=9\,x^4y^3+12\,x^4y^2+6\,x^3y^3+5\,x^3y^2-2\,x^2y^2$

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

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

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

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

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

[7] $(-3\,x^2y^2-xy^2)\cdot(3\,x^2y^2-4\,x^2y+3\,xy)=-9\,x^4y^4+12\,x^4y^3-3\,x^3y^4-5\,x^3y^3-3\,x^2y^3$