Repaso tema de polinomios 2ºESO

1

a) $2x+3$ d) $2x+1$ g) $2x+3x$

b) $3x-4$ e) x^2 h) $x+(x+1)+(x+2)$

c) $2x$ f) x^2+x^3

2

a) $-2x^4+6x^4+3x^4-5x^4=2x^4$ b) $3x^2y-6x^2y+5x^2y=2x^2y$

c) $3a^2b-5ab^2+a^2b+ab^2=4a^2b-4ab^2$ d) $x^2+\frac{x^2}{3}=\frac{3x^2}{3}+\frac{x^2}{3}=\frac{4x^2}{3}$

e) $x^2y^2-5x^2y^2-(3x^2y^2-4x^2y^2)-8x^2y^2$

$x^2y^2-5x^2y^2-3x^2y^2+4x^2y^2-8x^2y^2=-11x^2y^2$

f) $2x^3-(x^3-3x^3)=2x^3-x^3+3x^3=4x^3$

g) $-3x+7y-(8y+y-6x)=-3x+7y-8y-y+6x=3x-2y$

3

a) $7x\cdot(-8x^2)=-56x^3$ b) $\frac{3}{4}x^2\cdot\frac{5}{2}\cdot x^3=\frac{3}{4}\cdot\frac{5}{2}x^2\cdot x^3=\frac{15}{8}x^5$

c) $ab^3\cdot(-3a^2b)\cdot 5a^3b=-15a^6\cdot b^5$

d) $-ab^2c^3\cdot(-3a^2bc)\cdot 3abc=9a^4b^4c^5$

e) $(6x^4):(2x^2)=\frac{6x^4}{2x^2}=3x^2$

f) $\frac{12a^6}{3a^3}=4a^3$

g) $(5x^7y^3):(3x^2y)=\frac{5x^7y^3}{3x^2y}=\frac{5}{3}x^5y^2$

h) $(-12a^5\cdot b^4c^6):(7a^3b^2c)=\frac{-12a^5b^4c^6}{7a^3b^2c}=-\frac{12}{7}a^2b^2c^5$

④ $P(x) = 2x^3 - 3x^2 + 4x - 2$

$Q(x) = x^4 - x^3 + 3x^2 + 4$

a) $P(x) + Q(x) = 2x^3 - 3x^2 + 4x - 2 + x^4 - x^3 + 3x^2 + 4 =$

$= x^4 + x^3 + 4x + 2$

b) $P(x) - Q(x) = 2x^3 - 3x^2 + 4x - 2 - (x^4 - x^3 + 3x^2 + 4) =$

$= 2x^3 - 3x^2 + 4x - 2 - x^4 + x^3 - 3x^2 - 4 = -x^4 + 3x^3 - 6x^2 + 4x - 6$

c) $3 \cdot P(x) = 3 \cdot (2x^3 - 3x^2 + 4x - 2) = 6x^3 - 9x^2 + 12x - 6$

d) $-5 \cdot Q(x) = -5 \cdot (x^4 - x^3 + 3x^2 + 4) = -5x^4 + 5x^3 - 15x^2 - 20$

e) $3P(x) - 5Q(x) = 3 \cdot (2x^3 - 3x^2 + 4x - 2) - 5 \cdot (x^4 - x^3 + 3x^2 + 4) =$

$= 6x^3 - 9x^2 + 12x - 6 - 5x^4 + 5x^3 - 15x^2 - 20 =$

$= -5x^4 + 11x^3 - 24x^2 + 12x - 26$

⑤ a) $(x-1) \cdot (2x-3) = 2x^2 - 3x - 2x + 3 = 2x^2 - 5x + 3$

b) $(x+1) \cdot (x^2 + x + 1) = x^3 + x^2 + x + x^2 + x + 1 = x^3 + 2x^2 + 2x + 1$

c) $(x^2 - 2x - 3) \cdot (2x^3 - 5x^2 - 4x + 3) =$

$= 2x^5 - 5x^4 - 4x^3 + 3x^2 - 4x^4 + 10x^3 + 8x^2 - 6x - 6x^3 + 15x^2 + 12x - 9 =$

$= 2x^5 - 9x^4 + 0x^3 + 26x^2 + 6x - 9$

⑥ $A = x^3 - 5x + 4 \qquad B = x^3 - 4x - 8$

a) $A + B = x^3 - 5x + 4 + x^3 - 4x - 8 = 2x^3 - 9x - 4$

b) $A - B = x^3 - 5x + 4 - (x^3 - 4x - 8) = x^3 - 5x + 4 - x^3 + 4x + 8 = -x + 12$

c) $A \circ B = (x^3 - 5x + 4) \cdot (x^3 - 4x - 8) =$

$= x^6 - 4x^4 - 8x^3 - 5x^4 + 20x^2 + 40x + 4x^3 - 16x - 32 =$

$= x^6 - 9x^4 - 4x^3 + 20x^2 + 24x - 32$

7) a) $2x^2 + x - 2 - (x^2 - 3x + 2) \cdot (5x^2 - 3)$

$= 2x^2 + x - 2 - (5x^4 - 15x^3 + 10x^2 - 3x^2 + 9x - 6) =$

$= 2x^2 + x - 2 - 5x^4 + 15x^3 - 10x^2 + 3x^2 - 9x + 6 =$

$= -5x^4 + 15x^3 - 5x^2 - 8x + 4$

b) $2 \cdot (x^3 + 3x - 1) - (2x^2 - x) \cdot (-x^2 + 3x + 1)$

$2x^3 + 6x - 2 - (-2x^4 + 6x^3 + 2x^2 + x^3 - 3x^2 - x)$

$2x^3 + 6x - 2 + 2x^4 - 6x^3 - 2x^2 - x^3 + 3x^2 + x$

$2x^4 - 5x^3 + x^2 + 7x - 2$

c) $(-2x^2 + x - 2) \cdot (x^2 - 1) - (2x^5 - x^4 + x^2 + 2x - 1)$

$-2x^4 + x^3 - 2x^2 + 2x^2 - x + 2 - 2x^5 + x^4 - x^2 - 2x + 1$

$-2x^5 - x^4 + x^3 - x^2 - 3x + 3$

8) a) $(x+2)^2 = x^2 + 2 \cdot x \cdot 2 + 2^2 = x^2 + 4x + 4$

b) $(x-3)^2 = x^2 - 2 \cdot 3 \cdot x + 3^2 = x^2 - 6x + 9$

c) $(x+4) \cdot (x-4) = x^2 - 16$

d) $(3x+2)^2 = (3x)^2 + 2 \cdot 3x \cdot 2 + 2^2 = 9x^2 + 12x + 4$

e) $(2x-5)^2 = (2x)^2 - 2 \cdot 2x \cdot 5 + 5^2 = 4x^2 - 20x + 25$

f) $(5a-2)\cdot(5a+2) = (5a)^2 - 2^2 = 25a^2 - 4$

⑨

a) $4x^2 - 20x + 25 = (2x-5)^2$

b) $x^2 + 6xy + 9y^2 = (x+3y)^2$

c) $49a^2 - 70ab + 25b^2 = (7a-5b)^2$

d) $49 - x^2 = (7+x)\cdot(7-x)$

e) $16x^4 - 24x^2 + 9 = (4x^2-3)^2$

f) $1 - y^2 = (1+y)\cdot(1-y)$

⑩

a) $(5x-3)\cdot(5x+3) + (5x^2-4)^2$

$(5x)^2 - 3^2 + (5x^2)^2 - 2\cdot 5x^2\cdot 4 + 4^2$

$25x^2 - 9 + 25x^4 - 40x^2 + 16$

$25x^4 - 15x^2 + 7$

b) $(3x+2)^2 - (2x+3)^2 + (x-2)\cdot(x+2)$

$(3x)^2 + 2\cdot 3x\cdot 2 + 2^2 - ((2x)^2 + 2\cdot 2x\cdot 3 + 3^2) + x^2 - 2^2$

$9x^2 + 12x + 4 - (4x^2 + 12x + 9) + x^2 - 4$

$9x^2 + 12x + 4 - 4x^2 - 12x - 9 + x^2 - 4$

$6x^2 - 9$

⑪

a) $5a + 5b = 5(a+b)$

b) $2x + 4x^2 = 2x(1+2x)$

c) $4x^2 + 2x^3 = 2x^2\cdot(2+x)$

d) $x^3yz - 2xy + 3x^2y^3z = xy\cdot(x^2z - 2 + 3xy^2z)$

e) $4x^2 - 6x + 2x^3 = 2x(2x - 3 + x^2)$

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