POLYNOMIALS 1

1.- Work out:

a) $x(x-3)^2 + 2x(x-2)(x+2) =$

b) $3(2x-3)^2 - 2(2x+1)(2x-1) =$

c) $(2x+3)(x-1) - 2x^2 - x + 3 =$

d) $2(x-2)(x+3) + 3x^2 - 2 =$

e) $2(x-3)(x+1) - 2(x-2)^2 =$

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

2. Complete:

a) $x^2 +$ $+16 = (x + 4)^2$

b) $x^2 - 25 = (x - 5)(x +$ $)$

c) $16\,x^2 -$ $+ 9 = (\quad -\quad)^2$

d) .... $x^2 +$ $+$ $= (\,5x\quad 2)^2$

e) $x^2 - 20\,x +$ $=$ (..... ... .)

3. Work out:

a) $3\left(x^3 - 3x^2 + x - 5\right) - 2\left(x^3 + 2x - 6\right) =$

b) $\left(x^3 - 3x^2 + 4x - 1\right) - \left(2x^3 - 3x - 1\right) =$

c) $\left(3x^2 - 1\right)\left(x^3 + 2x^2 - 5x - 1\right) =$

d) SOLUTION

1. Work out:

a) $x(x-3)^2+2x(x-2)(x+2) = x(x^2-6x+9)+2x(x^2-4) = x^3-6x^2+9x+2x^3-8x =$
$= 3x^3-6x^2+x$

b) $3(2x-3)^2-2(2x+1)(2x-1) = 3(4x^2-12x+9)-2(4x^2-1) = 12x^2-36x+27-8x^2+2 =$
$= 4x^2-36x+29$

c) $(2x+3)(x-1)-2x^2-x+3 = 2x^2+3x-2x-3-2x^2-x+3 = 0$

d) $2(x-2)(x+3)+3x^2-2 = 2(x^2+3x-2x-6)+3x^2-2 = 2x^2+6x-4x-12+3x^2-2 =$
$= 5x^2+2x-14$

e) $2(x-3)(x+1)-2(x-2)^2 = 2(x^2-3x+x-3)-2(x^2-4x+4) = 2x^2-6x+2x-6-2x^2+8x-$
$-8 = 4x-14$

f) $(x-y)(x+y)-3(x-y)^2 = x^2-y^2-3(x^2-2xy+y^2) = x^2-y^2-3x^2+6xy-3y^2 =$
$= -2x^2-4y^2+6x$

2. Complete:

a) $x^2 + 8x + 16 = (x+4)^2$

b) $x^2 - 25 = (x-5)(x+5)$

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

d) $x^2 + 20x + 4 = (5x+2)^2$

e) $x^2 - 20x + 100 = (x-10)^2$

3. Work out:

a) $3(x^3-3x^2+x-5)-2(x^3+2x-6) = 3x^3-9x^2+3x-15-2x^3-4x+12 =$
$= x^3-9x^2-x-3$

b) $(x^3-3x^2+4x-1)-(2x^3-3x-1) = x^3-3x^2+4x-1-2x^3+3x+1 =$
$= -x^3-3x^2+7x$

c) $(3x^2-1)(x^3+2x^2-5x-1) = 3x^5+6x^4-15x^3-3x^2-x^3-2x^2+5x+1 =$
$= 3x^5+6x^4-16x^3-5x^2+5x+1$