2.2.5 f

$6x^4 + 7x^2 - 3$

« Trinôme »

$\cdot 2$

$x^4 = (x^2)^2 = y^2$

$\boxed{x^2 = y}$ Changement de variable

$\boxed{6y^2 + 7y - 3}$ $6\left(y - \frac{-7+\sqrt{121}}{12}\right)\left(y - \frac{-7-\sqrt{121}}{12}\right)$

$(2y+3)(3y-1) = 6y^2 - 2y + 9y - 3$

$\boxed{6\left(y - \frac{1}{3}\right)\left(y + \frac{3}{2}\right)}$ $= 6y^2 + 7y - 3$

$3\left(y - \frac{1}{3}\right)2\left(y + \frac{3}{2}\right)$

$(3y-1)(2y+3)$

$ax^2 + bx + c = a(x - x_1)(x - x_2)$

$x_1 = \frac{-b + \sqrt{\Delta}}{2a}$ $\Delta = b^2 - 4ac$

$x_2 = \frac{-b - \sqrt{\Delta}}{2a}$

$$6y^2+7y-3=(3y-1)(2y+3)$$

$y=x^2$

$$3x^2=A^2$$

$$(\sqrt{3})^2x^2=(\sqrt{3}x)^2$$

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

$$(\sqrt{3})^2=3$$

$$(A^2-B^2)\quad(A^2+B^2)$$

$$(A+B)(A-B)$$

$$=(\sqrt{3}x-1)(\sqrt{3}x+1)(2x^2+3)$$

$$2x^2+3=(\sqrt{2}x)^2+(\sqrt{3})^2$$

$A^2+B^2$ irreducible

~~factorizable~~

$$2x^2+0x+3=2(x-x_1)(x-x_2)$$

$\Delta=0^2-4\cdot2\cdot3=-24<0 \Rightarrow$ irred.

$ax - bx - ay + by$

$-y(a+b)$

$x(a-b) + y(-a+b)$

$-ay - by$

$x(a-b) - y(a-b)$

$(a-b) = -(b-a)$

$= (-b+a)$

$= (a-b)$

$(a-b)(x-y)$

$xA - yA = A(x-y)$

$(a-b)(x-y) = (a-b)\cdot x + (a-b)(-y)$

$P(x) = 3x^5 + 2x^4 - 10x^3 + 4x^2 + x - 1$

$Q(x) = x^2 - 3x + 4$ Donnée

$3x^5 + 2x^4 - 10x^3 + 4x^2 + x - 1$ | $x^2 - 3x + 4$

$-(3x^5 - 9x^4 + 12x^3)$

$11x^4 - 22x^3 + 4x^2$

$-(11x^4 - 33x^3 + 44x^2)$

$11x^3 - 40x^2 + x$

$-(11x^3 - 33x^2 + 44x)$

$-7x^2 - 43x - 1$

$-(-7x^2 + 21x - 28)$

$-64x + 27$ ← STOP (degré 1)

$3x^3 + 11x^2 + 11x - 7$ Quotient

Reste

$(x^2 - 3x + 4)(3x^3 + 11x^2 + 11x - 7) + (-64x + 27) =$

$\hookrightarrow 3x^5 + 2x^4 - 10x^3 + 4x^2 + x - 1$

ÉGALITÉ FONDAMENTALE

2.2.5 a)

$$x^4 - 13x^2 + 36 \qquad \cdot 2$$

$$(x^2)^2 = x^4$$

$$\Delta = 169 - 144 = 25 = 5^2$$

$$x_1 = \frac{13+5}{2} = 9$$

$$x_2 = \frac{13-5}{2} = 4$$

$$\Rightarrow x^4 - 13x^2 + 36 = (x^2-9)(x^2-4)$$

$$y^2 - 13y + 36 = (y-9)(y-4)$$

$$(x^2)^2 - 13x^2 + 36$$

$$\boxed{(x+3)(x-3)(x+2)(x-2)} = x^4 - 13x^2 + 36$$

2.2.7 a)

« des x partout »

$$x-2y\boxed{-x^2+2xy}+(x-2y)^2=$$

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

$$x-2y-x(x-2y)+(x-2y)(x-2y)$$

$$1(x-2y)-x(x-2y)+(x-2y)(x-2y)=(1-x+x-2y)(x-2y)$$

$$=(1-2y)(x-2y)$$

$$\boxed{x(-x+2y)}=-x^2+2xy$$

$$\boxed{-x(x-2y)}=-x\cdot x-x\cdot(-2y)$$

$$=-x^2+2xy$$