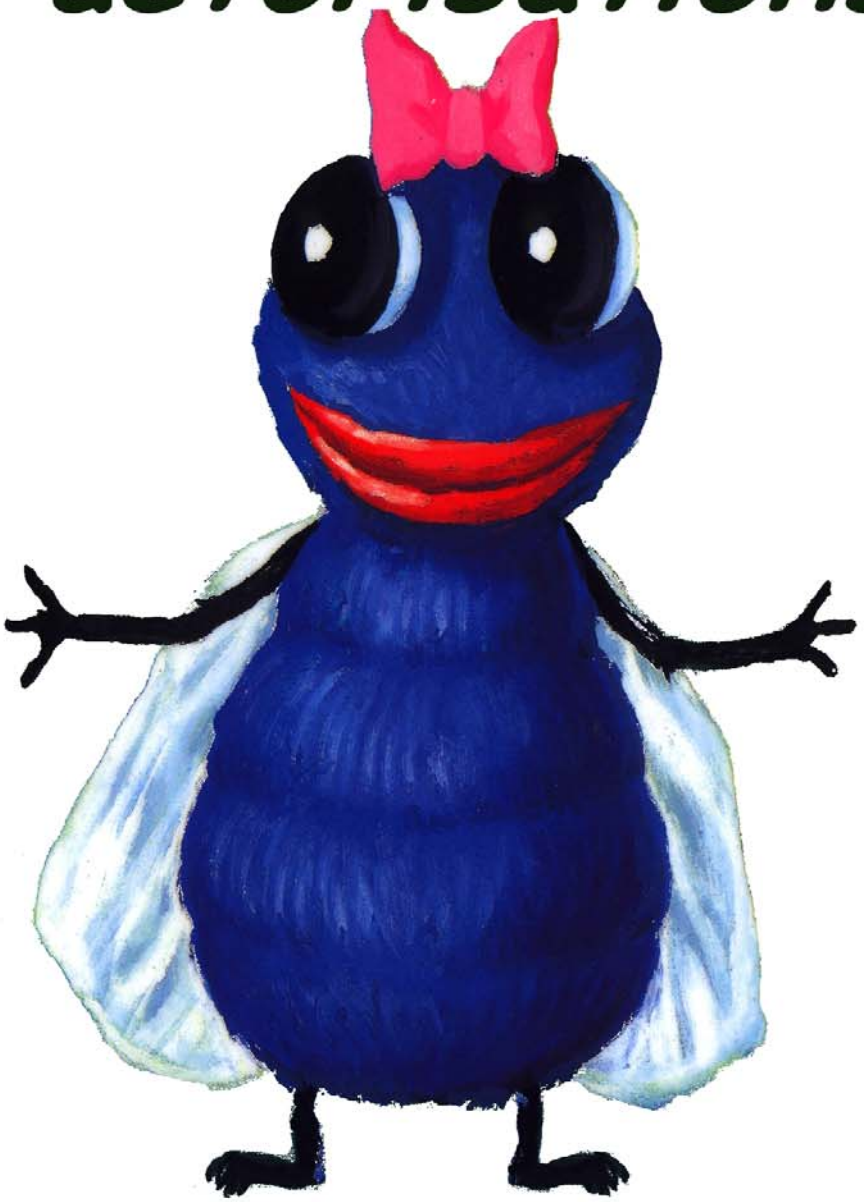
Développements et Factorisations



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Exercice 1

Rappeler les identités remarquables :

$(a + b)^2$ = ...

$(a – b)^2$ = ...

(a + b)(a – b) = ...

Exercice 2

Développer, réduire et ordonner les expressions suivantes :

1) $(x+4)(x+1) =$

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

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

4) $(4x-7)(3x+2) =$

5) $(4x-7)^2 + (3x+2) =$

6) $(-4x+1)^2 - 2(x+2) =$

7) $(x-7) - 5(3x+2)^2 + (x-1)^2 =$

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

9) $-3(1-2x)^2 - (3x+2)(1-5x) + (x-4)^2 =$

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

Exercice 3

a) Factorisez en repérant directement un facteur commun :

1) $25x^2 - 5x =$

2) $49x^3 - 7x^2 =$

3) $10x^3 - 15x^2 + 5x =$

4) $16x^7 - 8x^4 =$

5) $2x(2x+1)-3(2x+1) =$

6) $4x(3x+5)-7(3x+5) =$

b) Factorisez en utilisant une identité remarquable :

1) $x^2 - 9 =$

2) $4x^2 - 25 =$

3) $16x^2 - 49 =$

4) $x^2 - 8x + 16 =$

5) $x^2 + 14x + 49 =$

6) $4x^2 - 12x + 9 =$

7) $9x^2 - 12x + 4 =$

8) $\frac{x^2}{16} - \frac{49}{25} =$

9) $\frac{49}{16} - (2 - x)^2 =$

10) $(6x-1)^2 - 4x^2 =$

11) $49x^2 - (3x - 4)^2 =$

12) $(5x-1)^2 - 121x^2 =$

13) $81x^2 - (3x + 4)^2 =$

Exercice 4

Factoriser le plus possible les expressions suivantes :

$$A(x) = (7x-1)(2x-5) - (3x+1)(7x-1)$$

$$B(y) = 4y^2 + 8y + 4$$

$$C(z) = 8z(z-2)^2 - 2z^3$$

$$D(x) = 3x^2 + 6x + 3$$

$$E(x) = 9(x-5) - x^2(x-5)$$

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

$$G(x) = (2-x)(5x-3) + (4-2x)(x-1) - 7(x-2)$$

$$H(t) = (-2t-1)^2 - 9(3t+4)^2$$

$$I(x) = (6x-2)(2x+3) - (-9x+3)(-5x+7)$$

$$J(x) = 49x^2 - 14x + 4$$

$$K(y) = \frac{1}{4}y^2 + y + 1$$

$$L(x) = (4x-3)(x+1) + x(4x-3)$$

$$M(x) = (2x-5)^2 - 3(1-x)(2x-5)$$

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

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

$$P(x) = (x+3)(x-3) - (2x-6)x + (x-3)^2$$

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

$$R(x) = (x-11)^2 + (33-3x)(x+2)$$

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

$$T(x) = x^2 + 6x + 9$$

$$U(x) = 4x^2 - 2x + \frac{1}{4}$$

$$V(x) = 0.25x^2 + x + 1$$

Exercice 5

Factoriser le plus possible les expressions suivantes :

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

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

$$C(x) = 4(5x+3)^2 - 9(x-1)^2$$

$$D(x) = 5x^4 - 45x^2$$

$$E(x) = 25x^2 - 4 + (5x+2)(4x-7)$$

$$F(x) = 49 - 28x + 4x^2 + (7-2x)(5-3x)$$

$$G(x) = x^2(x-4) + 2x(x-4) + (x-4)$$

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