

# Corrections Savoir C. 1

## Corrigé Exercice 1

$$G = 36x^2 - 24x + 4$$

$$H = 16 - 9a^2$$

$$I = -3x^2 + 7x + 20$$

$$J = (1 - 2n)(4n^2 - 4n + 1)$$

$$J = -8n^3 + 12n^2 - 6n + 1$$

$$K = (3x^2 + 19x + 20) - (8x^2 + 2x - 3)$$

$$K = 3x^2 + 19x + 20 - 8x^2 - 2x + 3$$

$$K = -5x^2 + 17x + 23$$

$$L = 25p^2 + 30p + 9 + 3(5p^3 + 3p^2 - 10p - 6)$$

$$L = 25p^2 + 30p + 9 + 15p^3 + 9p^2 - 30p - 18$$

$$L = 15p^3 + 34p^2 - 9$$

### Un peu plus, si besoin...

$$M = 81b^2 + 18b + 1$$

$$N = 4x^2 - 25$$

$$P = -12x^2 + 11x - 2$$

$$Q = (4x^2 - 12x + 9)(3 + 2x)$$

$$Q = 8x^3 - 12x^2 - 18x + 27$$

## Corrigé Exercice 2

1. a.  $E = (x + 1)(3x)^2 = (x + 1)(3x)(3x) = 9x^2(x + 1) = 9x^3 + 9x^2.$

b.  $E = (4x)(2 - x)^2 = 4x(4 - 4x + x^2) = 16x - 16x^2 + 4x^3.$

c.  $E = (2t)(-3t)^2 = 2t(9t^2) = 18t^3$

2. a.  $F(2x) = 2(2x) - (2x)^2 = 4x - 4x^2.$

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

c.  $F(-n) = 2(-n) - (-n)^2 = -2n - n^2.$

## Corrigé Exercice 3

1) D'une part :  $f(x) = 2(x + 3)^2 - (x - 2)^2$   
 $= 2(x^2 + 6x + 9) - (x^2 - 4x + 4)$   
 $= x^2 + 16x + 14$

D'autre part :  $(x + 8)^2 - 50 = x^2 + 16x + 64 - 50$   
 $= x^2 + 16x + 14$

On a bien  $f(x) = (x + 8)^2 - 50$

2)  $C = (2x - 4)^2 - 9 = 4x^2 - 16x + 16 - 9$   
 $C = 4x^2 - 16x + 7$

et  $D = (2x - 1)(2x - 7) = 4x^2 - 14x - 2x + 7$   
 $D = 4x^2 - 16x + 7$  On a bien  $C = D$

### Un peu plus, si besoin...

1)  $B = 3x^2 - (3x + 6)(x - 2)$

$$B = 3x^2 - (3x^2 - 6x + 6x - 12)$$

$$B = 3x^2 - 3x^2 + 12 = 12$$

On a bien  $B = 12$

2) D'une part  $h(x) = 2x(4x - 3) - 4(x^2 + \frac{5}{2})$   
 $= 4x^2 - 6x - 10$

D'autre part :  $2(x + 1)(2x - 5) = 2(2x^2 - 3x - 5)$   
 $= 4x^2 - 6x - 10$

On a bien :  $h(x) = 2(x + 1)(2x - 5)$

## Corrigé Exercice 4

$$1) A = \frac{5-3x}{x} \quad B = \frac{2+4x(x+1)}{x+1} = \frac{4x^2+4x+2}{x+1}$$

$$C = \frac{(4x+1) \times 3 - 3 \times x^2}{6x^3} \quad D = \frac{5x(x+1)}{x+1} + \frac{3}{x+1}$$

$$C = \frac{-3x^2+12x+3}{6x^3} = \frac{-x^2+4x+1}{2x^3} \quad D = \frac{5x^2+5x+3}{x+1}$$

$$E = \frac{4x}{2x} - \frac{2x^2}{2x} - \frac{5}{2x} \quad F = \frac{16}{4x} - \frac{x^2}{4x}$$

$$E = \frac{-2x^2+4x-5}{2x} \quad F = \frac{16-x^2}{4x}$$

### Un peu plus, si besoin...

$$I = \frac{4x^3-2}{x^2} \quad J = \frac{x^2-1(1-x^2)}{1-x^2} = \frac{2x^2-1}{1-x^2}$$

$$K = \frac{5 \times 3}{8x^3 \times 3} + \frac{1 \times 4x^2}{6x \times 4x^2} \quad L = \frac{2-2x(3x-2)}{3x-2}$$

$$K = \frac{4x^2+15}{24x^3} \quad L = \frac{-6x^2+4x+2}{3x-2}$$

$$M = \frac{1-3(x+2)+4x(x+2)}{x+2} \quad N = \frac{2x}{x^2} + \frac{4}{x^2}$$

$$M = \frac{4x^2+5x-5}{x+2} \quad N = \frac{2x+4}{x^2}$$

## Corrigé Exercice 5

| A   |   | B  |   |
|---|---|--|---|
| <i>1<sup>re</sup> méthode</i>   | <i>2<sup>e</sup> méthode</i>  | <i>1<sup>re</sup> méthode</i>  | <i>2<sup>e</sup> méthode</i>  |
| $A = \frac{x \left(1 + \frac{1}{x}\right)}{x \left(\frac{2}{x} - 1\right)}$ $= \frac{x+1}{2-x}$ | $A = \frac{\frac{x}{x} + \frac{1}{x}}{\frac{2}{x} - \frac{x}{x}} = \frac{x+1}{x} \div \frac{2-x}{x}$ $= \frac{x+1}{x} \times \frac{x}{2-x} = \frac{x+1}{2-x}$ | $B = \frac{x^2(4x)}{x^2 \left(2 + \frac{1}{x^2}\right)}$ $= \frac{4x^3}{2x^2+1}$ | $B = \frac{4x}{\frac{2x^2}{x^2} + \frac{1}{x^2}} = 4x \div \frac{2x^2+1}{x^2}$ $= 4x \times \frac{x^2}{2x^2+1} = \frac{4x^3}{2x^2+1}$ |

C

|  |   |
|--|---|
| <i>1<sup>re</sup> méthode</i>  | <i>2<sup>e</sup> méthode</i>  |
| $C = \frac{a^2 \left(2 - \frac{3}{a^2}\right)}{a^2 \left(\frac{1}{a} + \frac{1}{a^2}\right)}$ $= \frac{2a^2-3}{a+1}$ | $A = \frac{\frac{2a^2}{a^2} - \frac{3}{a^2}}{\frac{a}{a^2} + \frac{1}{a^2}} = \frac{2a^2-3}{a^2} \div \frac{a+1}{a^2}$ $= \frac{2a^2-3}{a^2} \times \frac{a^2}{a+1} = \frac{2a^2-3}{a+1}$ |

D

|  |  |
|--|--|
| <i>1<sup>re</sup> méthode</i>  | <i>2<sup>e</sup> méthode</i>   |
| $D = \frac{2\sqrt{x} \left(\frac{1}{\sqrt{x}} + \sqrt{x}\right)}{2\sqrt{x} \left(1 - \frac{1}{2\sqrt{x}}\right)}$ $= \frac{2+2x}{2\sqrt{x}-1}$ | $B = \frac{\frac{1}{\sqrt{x}} + \frac{x}{\sqrt{x}}}{\frac{2\sqrt{x}}{2\sqrt{x}} - \frac{1}{2\sqrt{x}}} = \frac{1+x}{\sqrt{x}} \div \frac{2\sqrt{x}-1}{2\sqrt{x}}$ $= \frac{1+x}{\sqrt{x}} \times \frac{2\sqrt{x}}{2\sqrt{x}-1} = \frac{1+x}{\sqrt{x}-1}$ |

## Corrigé Exercice 6

On met au même dénominateur et on développe

$$D'une part : g(x) = \frac{2x(x+2)-6}{x+2} = \frac{2x^2+4x-6}{x+2}$$

$$Et d'autre part \quad \frac{2(x-1)(x+3)}{x+2} = \frac{2(x^2+2x-3)}{x+2}$$

$$= \frac{2x^2+4x-6}{x+2}$$

$$On a bien \quad g(x) = \frac{2(x-1)(x+3)}{x+2}$$

### Un peu plus, si besoin...

$$D'une part : \quad k(x) = 2 - \frac{3}{x} - \frac{2}{x^2} = \frac{2x^2-3x-2}{x^2}$$

$$Et d'autre part \quad \frac{(2x+1)(x-2)}{x^2} = \frac{2x^2-3x-2}{x^2}$$

$$On a bien \quad k(x) = \frac{(2x+1)(x-2)}{x^2}$$