

## Corrigé factorisations en vrac

### Exercice 1

- 1)  $3x(x+3)$
- 2)  $2(x+4y)$
- 3)  $5x^2(3x-2)$
- 4)  $\frac{1}{2}x\left(x-\frac{1}{2}\right)$
- 5)  $\sqrt{3}x(y-5)$

### Exercice 2

- 1)  $(x-1)[(2x+5)-(3x+8)] = (x-1)(2x+5-3x-8) = (x-1)(-x-3)$
- 2)  $(9x+8)[(x-2)^2+(x-3)] = (9x+8)(x^2-4x+4+x-3) = (9x+8)(x^2-3x+1)$
- 3)  $(x-5)^2(x+8)-(x-5)(x+6) = (x-5)[(x-5)(x+8)-(x+6)] = (x-5)(x^2+2x-46)$
- 4)  $(2x-9)(x-7)^2+(x-7)(2x-9)^2 = (2x-9)(x-7)[x-7+2x-9] = (2x-9)(x-7)(3x-16)$
- 5)  $3(x-8)^2(x-7)-9(x-7)^3(x-8) = 3(x-8)(x-7)[x-8-3(x-7)^2] =$   
 $3(x-8)(x-7)[x-8-3(x^2-14x+49)] = 3(x-8)(x-7)(-3x^2+43x-155)$

### Exercice 3

- 1)  $(x-3)(x+3)$
- 2)  $(x-\sqrt{5})(x+\sqrt{5})$
- 3)  $(5-y)(5+y)$
- 4)  $[(x-3)-3][(x-3)+3] = (x-6)x$
- 5)  $[(x-9)-(x-5)][(x-9)+(x-5)] = -4(2x-14) = -8(x-7)$

### Exercice 4

- 1)  $(x-2)^2$
- 2)  $(x+5)^2$
- 3)  $\left(x+\frac{1}{2}\right)^2$
- 4)  $(5x+3)^2$
- 5)  $(\sqrt{5}x+2)^2$

### Exercice 5

- 1)  $[(x-3)+(x-8)]^2 = (2x-11)^2$
- 2)  $[5-(x-7)]^2 = (12-x)^2$
- 3)  $[(2x-8)-7]^2 = (2x-15)^2$
- 4)  $[(x-5)-(x-8)]^2 = 9$
- 5)  $[(x+5)-(x-5)]^2 = 100$

### Exercice 6

- 1)  $(x-3)(x+3)+3(x-3)(x+8)-(x-3)^2 =$   
 $(x-3)[x+3+3(x+8)-(x-3)] = (x-3)(3x+30) = 3(x-3)(x+10)$
- 2)  $3(x^2-16)+(x-4)(x+8) = 3(x-4)(x+4)+(x-4)(x+8) =$   
 $(x-4)[3(x+4)+x+8] = (x-4)(4x+20) = 4(x-4)(x+5)$
- 3)  $[(x+7)-(2x-8)][(x+7)+(2x-8)]+(15-x)(x-2) =$   
 $(-x+15)(3x-1)+(15-x)(x-2) = (15-x)(3x-1+x-2) =$   
 $(15-x)(4x-3)$

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$$4) \left(\frac{1}{2}x-3\right)^2 + \left(\frac{1}{2}x-3\right)(2x+7) = \left(\frac{1}{2}x-3\right)\left(\frac{1}{2}x-3+2x+7\right) = \left(\frac{1}{2}x-3\right)\left(\frac{5}{2}x+4\right)$$

$$5) [(x-2)-3][(x-2)+3] + (x-5)(x+10) = (x-5)(x+1) + (x-5)(x+10) \\ = (x-5)(x+1+x+10) = (x-5)(2x+11)$$