

# Corrigé du devoir de mathématiques

**Exercice 1**  $A(x) = (1 + 3x)^2 - (1 - 3x)^2 = 1 + 6x + 9x^2 - (1 - 6x + 9x^2) = 12x$

$B(x) = (2x + 3)(x + 1) + (2x - 1)^2 = 2x^2 + 2x + 3x + 3 + 4x^2 - 4x + 1 = 6x^2 + x + 4$  **Exercice 2**  $C(x) =$

$(2x - 2)(2x - 6) - (x - 3)(2x - 6) = (2x - 6)[(2x - 2) - (x - 3)] = (2x - 6)(x + 1)$

$D(x) = (-x + 3)(2x - 1) + (-x + 3) = (-x + 3)[(2x - 1) + 1] = (-x + 3)(2x)$

**Exercice 3**  $A(x) = \frac{2}{3x + 4} - \frac{5}{6x + 7} = \frac{2(6x + 7) - 5(3x + 4)}{(3x + 4)(6x + 7)} = \frac{-3x - 6}{(3x + 4)(6x + 7)}$

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

**Exercice 4**

•  $a = (\sqrt{12} - \sqrt{3})^2 = (\sqrt{12})^2 - 2\sqrt{12}\sqrt{3} + (\sqrt{3})^2 = 12 - 2\sqrt{36} + 3 = 12 - 12 + 3 = 3$

•  $b = (3\sqrt{2})^2 - (\sqrt{2} - 1)^2 = 3^2\sqrt{2}^2 - (\sqrt{2}^2 - 2\sqrt{2} + 1^2) = 18 - (2 - 2\sqrt{2} + 1) = 15 + 2\sqrt{2}$

•  $c = \frac{15}{\sqrt{5}} = \frac{15 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} = \frac{15\sqrt{5}}{5} = 3\sqrt{5}$       •  $d = \frac{2}{2 + \sqrt{3}} = \frac{2(2 - \sqrt{3})}{(2 + \sqrt{3})(2 - \sqrt{3})} = 2(2 - \sqrt{3})$

•  $e = \frac{\sqrt{3} + \sqrt{12}}{\sqrt{3} - \sqrt{12}} = \frac{(\sqrt{3} + \sqrt{12})(\sqrt{3} + \sqrt{12})}{(\sqrt{3} - \sqrt{12})(\sqrt{3} + \sqrt{12})} = \frac{(\sqrt{3})^2 + 2\sqrt{3}\sqrt{12} + (\sqrt{12})^2}{3 - 12} = \frac{27}{-9} = -3$

**Exercice 5**  $A = (a^{-3}b^4)^3$  et  $B = a^3b^{-2}$ , alors

•  $A = a^{-3 \times 3}b^{4 \times 3} = a^{-9}b^{12}$

•  $A \times B = a^{-9}b^{12}a^3b^{-2} = a^{-6}b^{10}$

•  $\frac{A}{B} = \frac{a^{-9}b^{12}}{a^3b^{-2}} = a^{-12}b^{14}$