## Exercice 1 :

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

$A = -21 + 14x + 9x - 6x^2$

$A = -6x^2 + 23x - 21$

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

$B = -8x + 6x^2 + 12 - 9x - 3x^2 - 2x + 9x + 6$

$B = 3x^2 - 10x + 18$

## Exercice 2 :

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

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

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

$A = (3 - 5x)(6x - 2)$

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

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

$B = (5x + 3)(-x - 5)$

## Exercice 3 :

$A = \frac{4}{x - 5} - \frac{x}{3}$

$A = \frac{12}{3(x - 5)} - \frac{x(x - 5)}{3(x - 5)}$

$A = \frac{12 - x^2 + 5x}{3(x - 5)}$

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

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

$$B = \frac{2x+1-6x^2-3x+2x^2-x+4x-2}{4x^2-1}$$

$$B = \frac{-4x^2+2x-1}{4x^2-1}$$

## Exercice 4 :

$$A = \frac{4+\frac{1}{3}}{4+\frac{4}{3}}$$

$$A = \frac{\frac{12}{3}+\frac{1}{3}}{\frac{12}{3}+\frac{4}{3}}$$

$$A = \frac{13}{3} \times \frac{3}{16}$$

$$A = \frac{13}{16}$$

$A \in \mathbb{D}$

$$B = \frac{4\times10^{3}\times(2\times10^{-2})^{2}}{4\times10^{-2}\times20\times(10^{3})^{2}}$$

$$B = \frac{4\times4}{4\times5\times4} \times \frac{10^{3}\times10^{-4}}{10^{-2}\times10^{6}}$$

$$B = \frac{1}{5} \times \frac{10^{-1}}{10^{4}}$$

$$B = \frac{1}{5} \times 10^{-5}$$

$$B = 0{,}2 \times 10^{-5}$$

$$B = 2\times10^{-6}$$

$B \in \mathbb{D}$

$$C = (\sqrt{5}+1)(\sqrt{5}-1)$$

$$C = (\sqrt{5})^2 - 1^2$$

$$C = 5 - 1$$

$$C = 4$$

$$C \in \mathbb{N}$$

$$F = \left(\frac{2-\frac{2}{5}}{1+\frac{2}{5}}\right) \div \left(1-\frac{5}{4}\right)$$

$$E = \left(\frac{\frac{10}{5}-\frac{2}{5}}{\frac{5}{5}+\frac{2}{5}}\right) : \left(\frac{4}{4}-\frac{5}{4}\right)$$

$$E = \frac{8}{5} \times \frac{5}{7} : \left(-\frac{1}{4}\right)$$

$$E = \frac{8}{7} \times (-4)$$

$$E = -\frac{32}{7}$$

$$E \in \mathbb{D}$$

$$D = \frac{5}{4} - \frac{3}{4} \times \left(\frac{2}{5}-\frac{2}{3}\right) : \frac{4}{7}$$

$$D = \frac{5}{4} - \frac{3}{4} \times \left(\frac{6}{15}-\frac{10}{15}\right) : \frac{4}{7}$$

$$D = \frac{5}{4} - \frac{3}{4} \times \left(-\frac{4}{15}\right) : \frac{4}{7}$$

$$D = \frac{5}{4} + \frac{3}{15} : \frac{4}{7}$$

$$D = \frac{5}{4} + \frac{3}{15} \times \frac{7}{4}$$

$$D = \frac{5}{4} + \frac{21}{60}$$

$$D = \frac{96}{60}$$

$$D = \frac{8}{5} \qquad D \in \mathbb{D}$$

## Exercice 5

$$a^2+b^2 = (3\sqrt{2}-5)^2 + (2\sqrt{5}+3)^2$$
$$= 9\times 2 - 2\times 5\times 3\sqrt{2} + 25 + 4\times 5 + 2\times 3\times 2\sqrt{5} + 9$$
$$= 18 - 30\sqrt{2} + 25 + 20 + 12\sqrt{5} + 9$$
$$= 72 - 30\sqrt{2} + 12\sqrt{5}$$

$$ab = (3\sqrt{2}-5)(2\sqrt{5}+3)$$
$$= 6\sqrt{2}\times\sqrt{5} + 9\sqrt{2} - 10\sqrt{5} - 15$$
$$= 6\sqrt{10} + 9\sqrt{2} - 10\sqrt{5} - 15$$

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

$$= 72 - 30\sqrt{2} + 12\sqrt{5} + 2(6\sqrt{10} + 9\sqrt{2} - 10\sqrt{5} - 15)$$
$$= 72 - 30\sqrt{2} + 12\sqrt{5} + 12\sqrt{10} + 18\sqrt{2} - 20\sqrt{5} - 30$$
$$= 42 - 12\sqrt{2} - 8\sqrt{5} + 12\sqrt{10}$$

## Exercice 6

$IJ^2 = (2\sqrt{5}+3)^2 = 4\times5 + 3\times2\times2\sqrt{5} + 9$

$= 12\sqrt{5} + 29$

$IK^2 = (3\sqrt{2}-2)^2 = 9\times2 - 2\times2\times3\sqrt{2} + 4$

$= -12\sqrt{2} + 22$

$JK^2 = (2\sqrt{13})^2 = 4\times13 = 52$

$IJ^2 \neq IK^2 + JK^2$ donc le triangle IJK n'est pas rectangle.

## Exercice 7

1) $9x^2 - 49 = (3x-7)(3x+7)$

2) $H = 9x^2 - 49 - (3x-7)(2x+1)$

$H = (3x-7)(3x+7) - (3x-7)(2x+1)$

$H = (3x-7)(3x+7-2x-1)$

$H = (3x-7)(x+6)$

3) $H = (3\times(-2)-7)(-2+6)$

$H = (-6-7)(4)$

$H = (-13)\times4$

$H = -52$

4) $F = (x+1)(2x+5) + 4x^2 + 20x + 25$

$F = (x+1)(2x+5) + (2x+5)^2$

$F = (2x+5)(x+1+2x+5)$

$F = (2x+5)(3x+6)$

## Exercice 8

$D = (3-2\sqrt{5})^2 - (3\sqrt{2}+7)(2\sqrt{5}-4)$

$D = 9 - 3\times 2\times 2\sqrt{5} + 4\times 5 - 6\sqrt{10} + 12\sqrt{2} - 14\sqrt{5} + 28$

$D = 9 - 12\sqrt{5} + 20 - 6\sqrt{10} + 12\sqrt{2} - 14\sqrt{5} + 28$

$D = -26\sqrt{5} - 6\sqrt{10} + 12\sqrt{2} + 57$

## Exercice 9

$C = \dfrac{3}{\sqrt{2}+2}$

$C = \dfrac{3(\sqrt{2}-2)}{(\sqrt{2}+2)(\sqrt{2}-2)}$

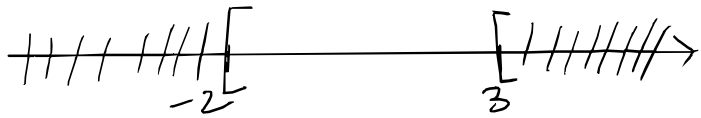
$C = \dfrac{3\sqrt{2}-6}{2-4}$

$C = \dfrac{3\sqrt{2}-6}{-2}$

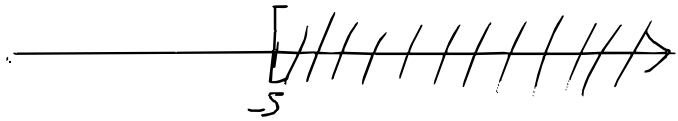
$C = -\dfrac{3}{2}\sqrt{2} + 3$

# Exercice 10

1a)




1b)




1c)

