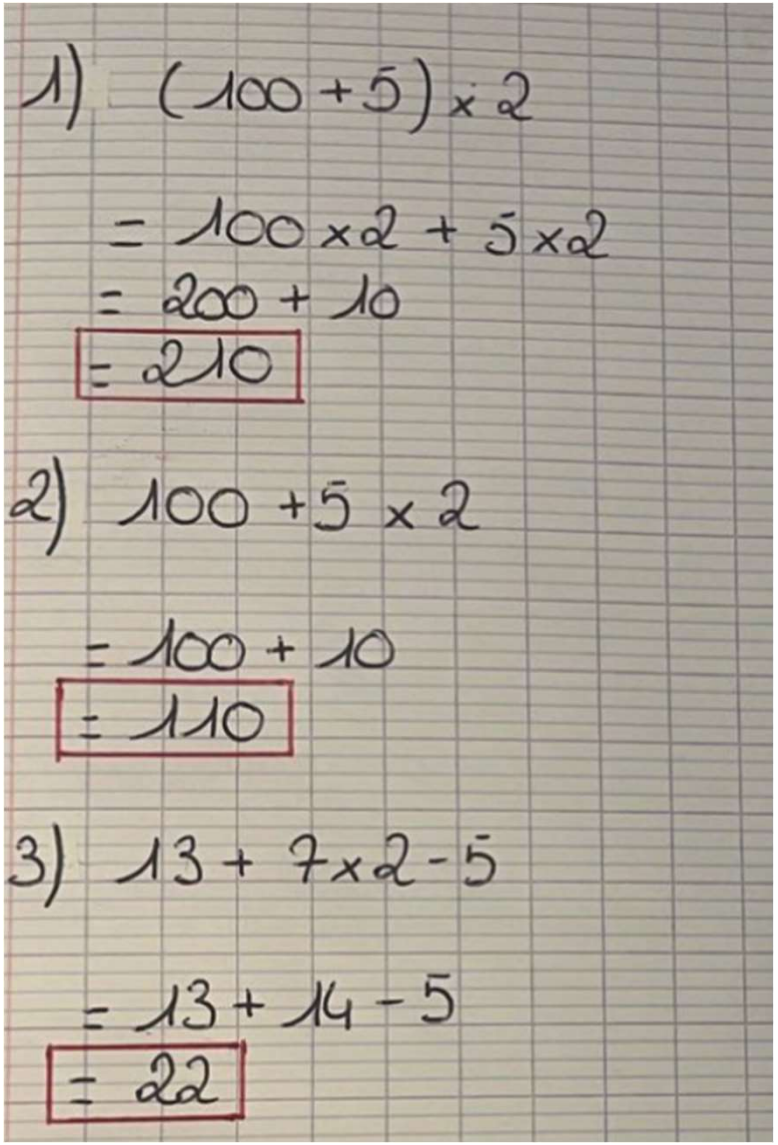
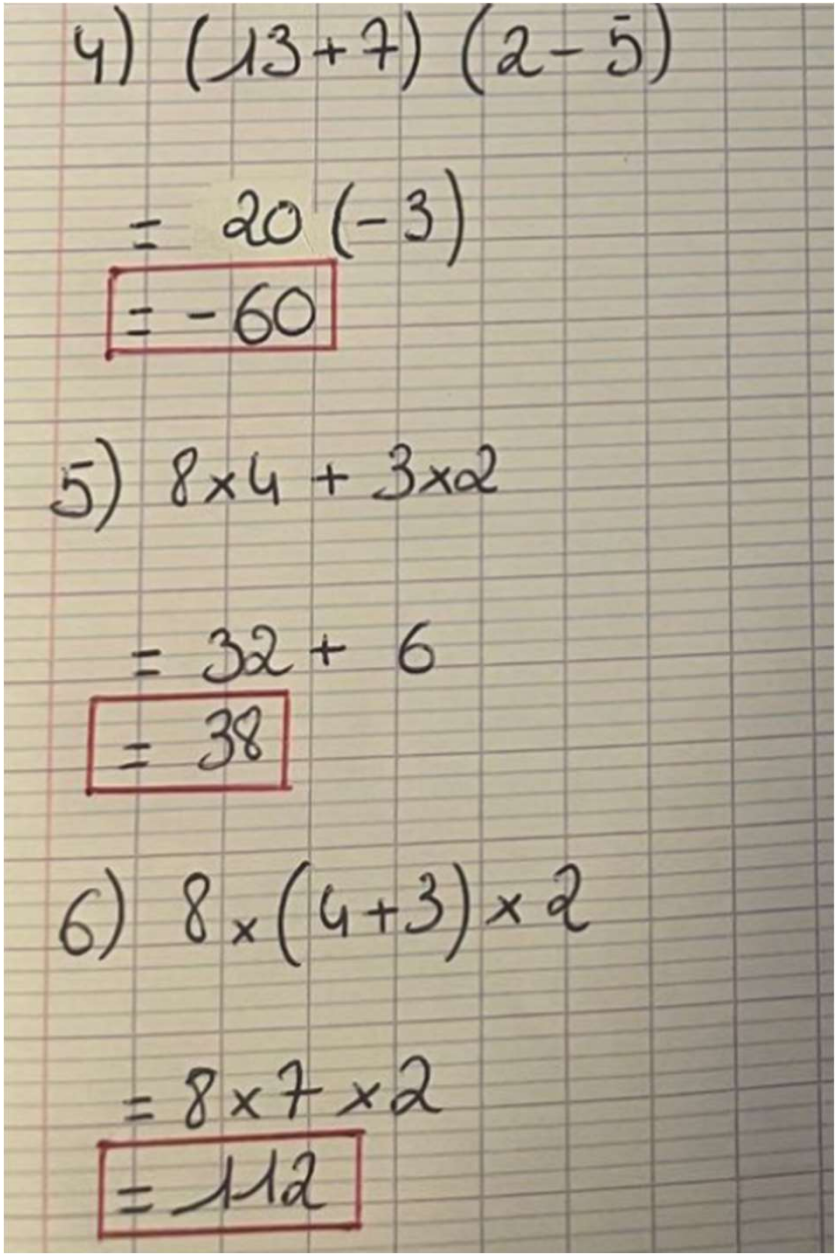
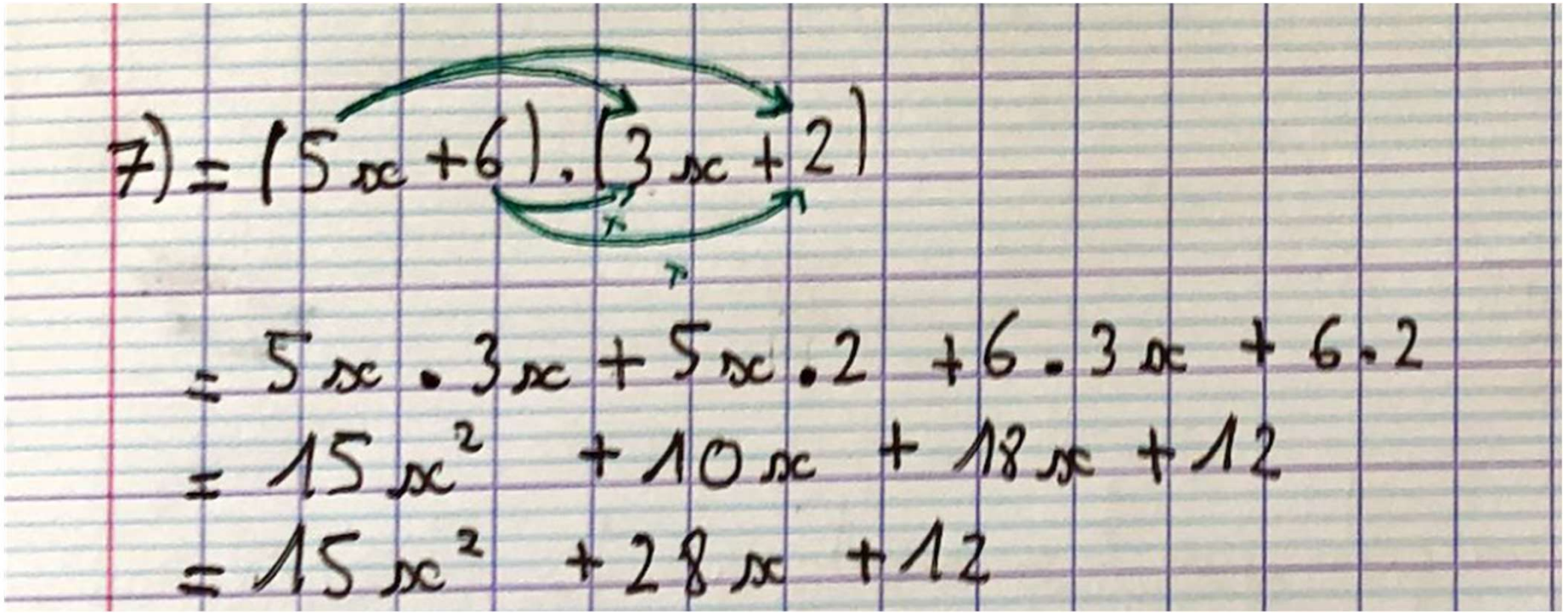
Corrigé du DM1
1FTP

Exercice 1


1) (100+5)×2
= 100×2 + 5×2
= 200 + 10
= 210
2) 100 +5 × 2
= 100 + 10
= 110
3) 13 + 7×2 - 5
= 13 + 14 - 5
= 22


4) (13+7) (2-5)
= 20 (-3)
= -60
5) 8×4 + 3×2
= 32 + 6
= 38
6) 8×(4+3)×2
= 8×7×2
= 112


7) = (5x + 6) . (3x + 2)
= 5x . 3x + 5x . 2 + 6 . 3x + 6 . 2
= 15x² + 10x + 18x + 12
= 15x² + 28x + 12

8) $= 5x + 6.(3x + 2)$

$= 5x + 6.3x + 6.2$

$= 5x + 18x + 12$

$= 23x + 12$

9) $= 2 - 1(2R + 5)$

$= 2 - 2R - 5$

$= -2R - 3$

10) $= 3y + x \cdot (y^2 - 2y)$

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

$= 3y + y^2 x - 2yx$

11) $= 3y + x y^2 - 2y$

$= 3y - 2y + x y^2$

$= y + x y^2$

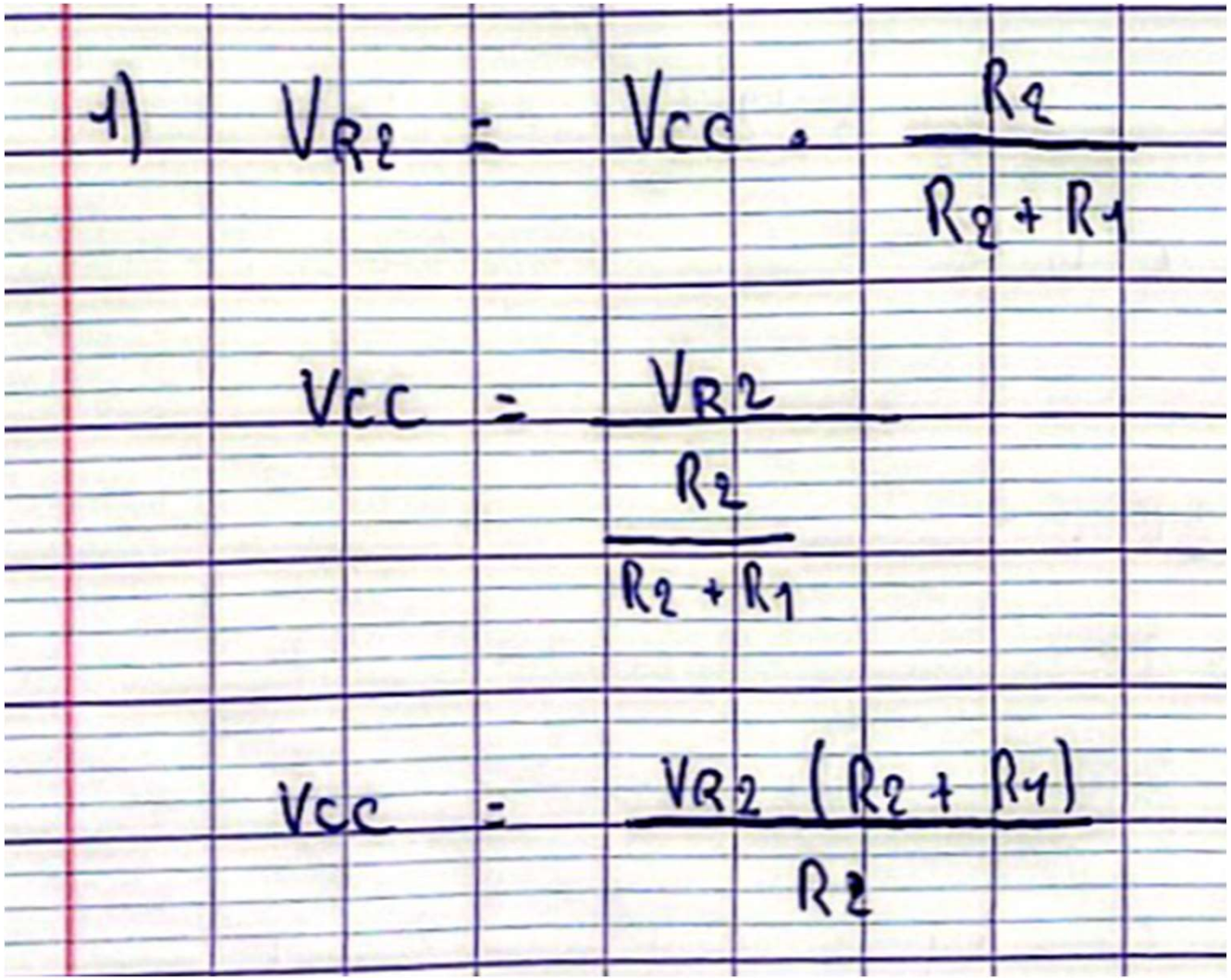
Exercice 2

Donc $\frac{1}{Re} = \frac{1}{R1} + \frac{1}{R2}$ On sait que $\frac{a}{b} + \frac{c}{d} = \frac{ad + cb}{bd}$

$\frac{1}{Re} = \frac{1R2 + 1R1}{R1 \times R2} = \frac{R2 + R1}{R1 \times R2}$ donc Re vaut l'inverse, ça donne :

$$\boxed{Re = \frac{R2 \times R1}{R1 + R2}}$$

Exercice 3


1) $V_{R2} = V_{CC} \cdot \frac{R_2}{R_2 + R_1}$
$V_{CC} = \frac{V_{R2}}{\frac{R_2}{R_2 + R_1}}$
$V_{CC} = \frac{V_{R2}(R_2 + R_1)}{R_2}$

2)

$$V_{R2} = V_{CC} \cdot \frac{R_2}{R_2 + R_1}$$

$$V_{R2}(R_2 + R_1) = V_{CC} \cdot R_2$$

$$V_{R2} \cdot R_2 + V_{R2} \cdot R_1 = V_{CC} \cdot R_2$$

$$V_{R2} \cdot R_1 = V_{CC} \cdot R_2 - V_{R2} \cdot R_2$$

$$V_{R2} \cdot R_1 = R_2 (V_{cc} - V_{R2})$$

$$R_2 = \frac{V_{R2} \cdot R_1}{V_{cc} - V_{R2}}$$

On calcule R_2 :

$$R_2 = \frac{2 \times 1 \times 10^3}{5 - 2}$$

$$= \frac{2 \times 10^3}{3}$$

$$\simeq 666,7\ \Omega \simeq 7 \times 10^2\ K\Omega$$

Pour obtenir $V_{R2} = 2V$, il faut que $R_2 = 7 \times 10^2\ h_2\ \Omega$

2)

$$V_{R_2} = V_{CC} \times \frac{R_2}{R_2 + R_1}$$

$$\Rightarrow V_{R_2} \times (R_2 + R_1) = V_{CC} \times R_2$$

$$\Rightarrow V_{R_2} \times R_2 + V_{R_2} \times R_1 = V_{CC} \times R_2$$

$$\Rightarrow V_{R_2} \times R_2 - V_{CC} \times R_2 = -V_{R_2} \times R_1$$

$$\Rightarrow R_2 \times (V_{R_2} - V_{CC}) = -V_{R_2} \times R_1$$

$$\Rightarrow R_2 = \frac{(-V_{R_2} \times R_1)}{V_{R_2} - V_{CC}}$$

Maintenant que $V_{R_2} = 2V$ que $V_{cc} = 5V$ et que $R_1 = 1000\,\Omega$

soit $R_2 = \dfrac{(-2V \times 1000\,\Omega)}{2V - 5V}$

$$R_2 = \frac{-2000\,\Omega}{-3V}$$

$$R_2 = \frac{2000\,\Omega}{3V}$$

$$R_2 = 666{,}67\,\Omega$$