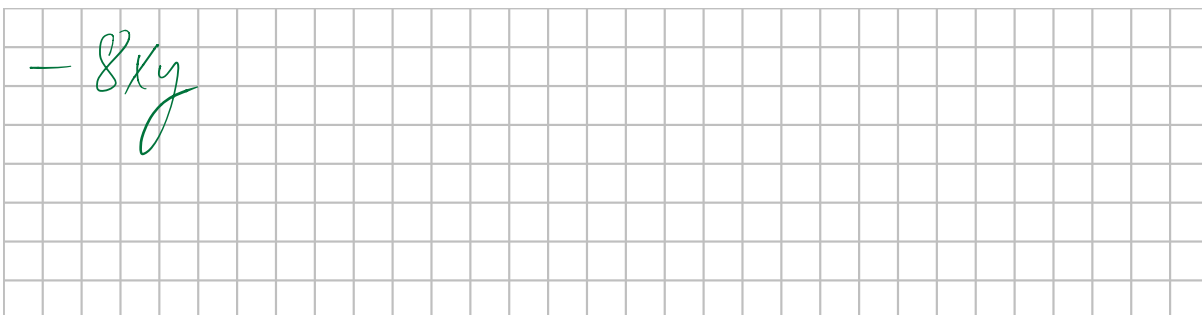

Calcul littéral

Problème 1

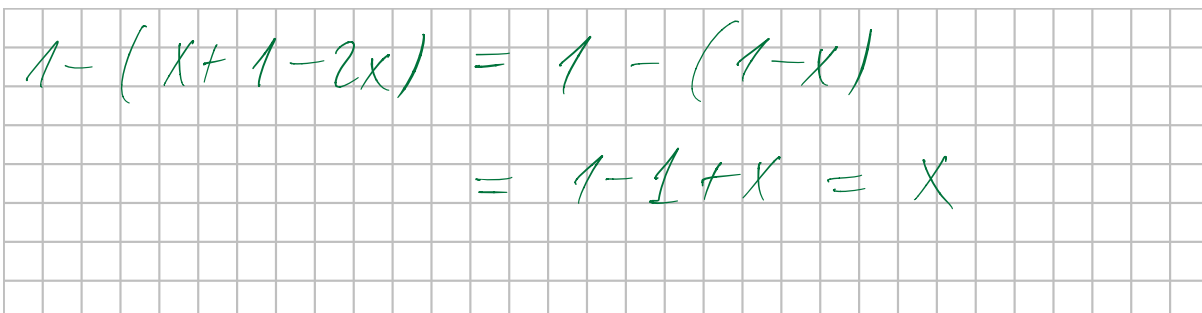
Effectuer et réduire complètement :

a) $3xy - 2xy + 5xy - 14xy$



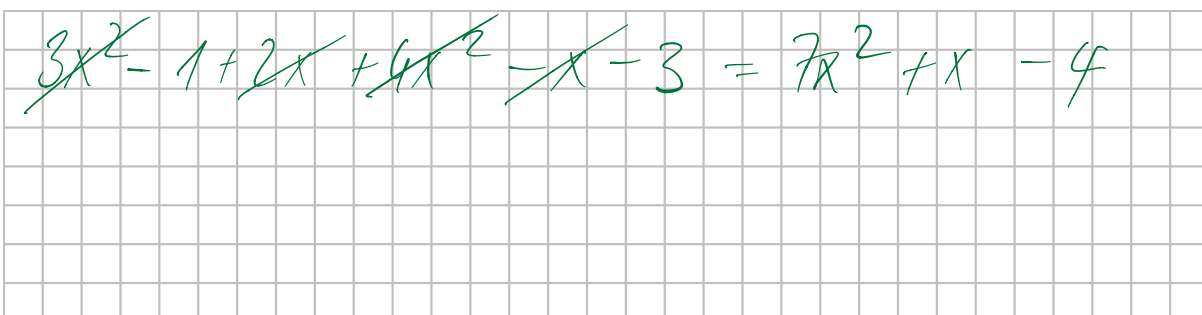
$-8xy$

b) $1 - (x + (1 - 2x))$



$1 - (x + 1 - 2x) = 1 - (1 - x)$
 $= 1 - 1 + x = x$

c) $3x^2 - (1 - 2x - 4x^2) - (x + 3)$



$3x^2 - 1 + 2x + 4x^2 - x - 3 = 7x^2 + x - 4$

d) $(y - 1) - (3y - 4) - (1 - 5y)$

$$y - 1 - 3y + 4 - 1 + 5y = 3y + 2$$

e) $(-1)(1 + s + s^2)$

$$-1 - s - s^2$$

f) $z^3(-5z^2 + 2z - 1)$

$$-5z^5 + 2z^4 - z^3$$

g) $(z^2 - 1)(z + 1)$

$$z^3 + z^2 - z - 1$$

h) $(x+1)(x+2)(3-x)$

$$\begin{aligned}(x^2+2x+x+2)(3-x) &= (x^2+3x+2)(3-x) \\ &= 3x^2+9x+6 -x^3-3x^2-2x \\ &= -x^3+7x+6\end{aligned}$$

i) $(t+5)^2$

$$t^2 + 10t + 25$$

j) $(1-z)^2$

$$1 - 2z + z^2$$

k) $(q+12)(q-12)$

$$q^2 - 144$$

l) $(z + 1)^3$

$$z^3 + 3z^2 + 3z + 1$$

m) $(xy - 2)(xy + 2)$

$$x^2y^2 - 4$$

n) $(x - 1)(x + 1)(x^2 - 1)$

$$\begin{aligned} (x^2 - 1)(x^2 - 1) &= (x^2 - 1)^2 \\ &= x^4 - 2x^2 + 1 \end{aligned}$$

o) $(1 - s)^2 - (1 + s)^2$

$$\begin{aligned} 1 - 2s + s^2 - (1 + 2s + s^2) &= \\ \cancel{1} - 2s + \cancel{s^2} - \cancel{1} - 2s - \cancel{s^2} &= -4s \end{aligned}$$

p) $(x - 3)(x^2 + 9)(x + 3)$

$$(x-3)(x+3)(x^2+9) = (x^2-9)(x^2+9)$$

$$= x^4 - 81$$

q) $(x + y)(x^2 - xy + y^2)$

$$x^3 - \cancel{x^2y} + \cancel{xy^2} + \cancel{yx^2} - \cancel{xy^2} + y^3 = x^3 + y^3$$

r) $(2s - 3t)(4s^2 + 6st + 9t^2)$

$$8s^3 - 27t^3$$

$$8s^3 + \cancel{12s^2t} + \cancel{18st^2} - \cancel{12s^2t} - \cancel{18st^2} - 27t^3$$