NPA 2023 CORRIGÉ 1ère partie

ex1 (a) $-(3-3\cdot 3) = -(3-9) = -(-6) = 6$

(b) $(-3)-5\cdot(-2) = -3-(-10) = -3+10 = 7$

(c) $-1-\left[(-2):(-1)+2\right] = -1-\left[2+2\right] = -1-[4] = -5$

ex2 (a) $\frac{3}{6}-\frac{3}{4}-\frac{2}{3} = \frac{6}{12}-\frac{9}{12}-\frac{8}{12} = -\frac{11}{12}$

(b) $\frac{2}{3}-\frac{3}{4}\cdot\frac{4}{5}+\frac{8^2}{20\,5} = \frac{2}{3}-\frac{3}{5}+\frac{2}{5} = \frac{10}{15}-\frac{9}{15}+\frac{6}{15} = \frac{7}{15}$

(c) $\frac{1}{3}:\frac{5}{2}\cdot\frac{18}{3} = \frac{1}{3}\cdot\frac{2}{5}\cdot\frac{18^6}{3_1} = \frac{12}{15} = \frac{4}{5}$

ex3 (a) $3a^2\cdot 2a^3 = 6a^5$

(b) $(-2y^2)(-3y^4) = 6y^6$

(c) $\left(\frac{1}{2}a\right)^2 = \frac{1}{4}a^2$

ex4 (a) $5x-4(2x+3) = 5x-8x-12 = -3x-12$

(b) $(5-3b)(4b-2) = 20b-10-12b^2+6b = -12b^2+26b-10$

(c) $(a+2b-3c)-(3a-b+2c) = a+2b-3c-3a+b-2c = -2a+3b-5c$

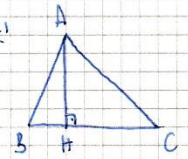
ex5

(a) $3(2x-4) = 0$ | C
$6x-12 = 0$ | $+12$
$6x = 12$ | $:6$
$\boxed{x = 2}$

(b) $\frac{y}{3}+2 = y-\frac{2}{5}$ | $\cdot 3\cdot 5$
$5y+30 = 15y-6$ | $-5y;+6$
$36 = 10y$ | $:10$
$y = \frac{36}{10} = \frac{18}{5}$
$\boxed{y = \frac{18}{5}}$

(c) $\frac{2}{3}(x-1) = 3$
$\frac{2(x-1)}{3} = 3$ | $\cdot 3$
$2x-2 = 9$ | $+2$
$2x = 11$ | $:2$
$\boxed{x = \frac{11}{2}}$

ex1



$AH = 4{,}8$ cm
$BH = 2$ cm
$HC = 9$ cm

$AB = ?$
$AC = ?$
ABC triangle rectangle ?

$AB^2 = AH^2 + BH^2$
$AB^2 = 4{,}8^2 + 2^2$
$AB^2 = 27{,}04$
$\boxed{AB = 5{,}2 \text{ cm}}$

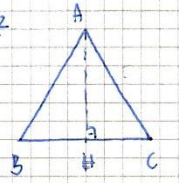
$AC^2 = AH^2 + HC^2$
$AC^2 = 4{,}8^2 + 9^2$
$AC^2 = 104{,}04$
$\boxed{AC = 10{,}2 \text{ cm}}$

$BC = BH + HC$
$BC = 2 + 9$
$\boxed{BC = 11 \text{ cm}}$

$BC^2 = 11^2 = 121$
$AB^2 + AC^2 = 5{,}2^2 + 10{,}2^2 = 131{,}08$
$121 \neq 131{,}08 \Rightarrow$ Pythagore non vérifié

$\Rightarrow$ le triangle n'est pas rectangle

ex2



$AB = AC = 5$ cm
$BC = 6$ cm

Aire = ?

$HC = \frac{BC}{2} \Rightarrow HC = 3$ cm

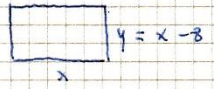
$AH^2 + HC^2 = AC^2$
$AH^2 = AC^2 - HC^2$
$AH^2 = 5^2 - 3^2$
$AH^2 = 25-9$
$AH^2 = 16$
$\boxed{AH = 4 \text{ cm}}$

$\text{Aire}_{ABC} = \frac{BC\cdot AH}{2}$

$\text{Aire}_{ABC} = \frac{6\cdot 4}{2}$

$\boxed{\text{Aire}_{ABC} = 12 \text{ cm}^2}$

ex 3



$p = 68$ cm

$2 \cdot x + 2 \cdot (x-8) = 68$ | C

$2x + 2x - 16 = 68$ | C

$4x - 16 = 68$ | +16

$4x = 84$ | : 4

$x = 21$

⇒ longueur $x = 21$ cm et largeur $= y = x - 8 = 13$ cm