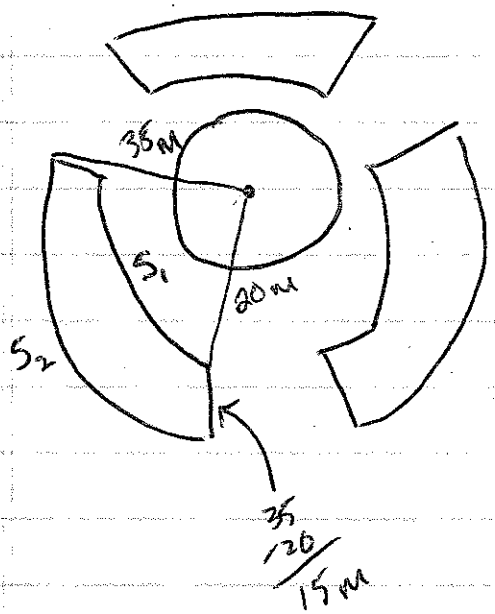
# 4.1 Les relations métriques
## Corrigé

P. 481 no 15.




$$\frac{S_1}{72^\circ} = \frac{2\pi(20)}{360^\circ}$$

$$S_1 = \frac{2\pi(20)\,72^\circ}{360^\circ}$$

$$S_1 = 25,1 \text{ m}$$

$$\frac{S_2}{72^\circ} = \frac{2\pi(35)}{360^\circ}$$

$$S_2 = \frac{2\pi(35)(72)}{360}$$

$$S_2 = 44,0 \text{ m}$$

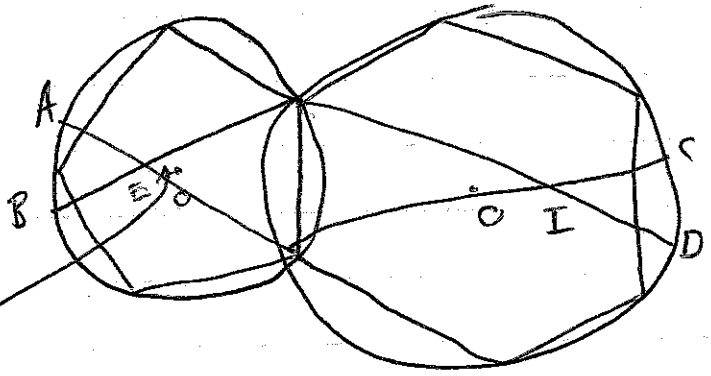
$$P = 15 \times 2 + 25,1 + 44$$

$$= 99,1 \text{ m}$$

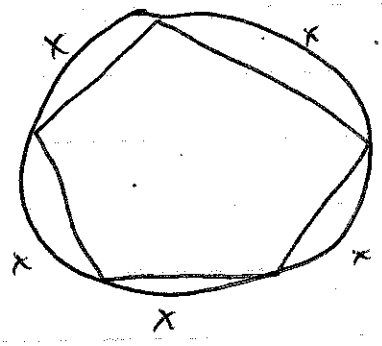
$$P_T = 99,1 \times 3$$

$$= 297,3 \text{ m}.$$

p. 517 13.

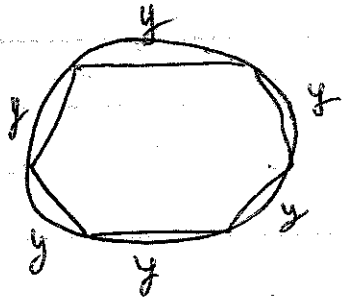



①




$\frac{5x}{5} = \frac{360°}{5}$

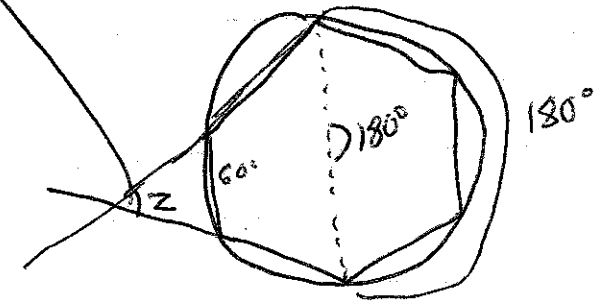
$x = 72°$




$6y = 360$

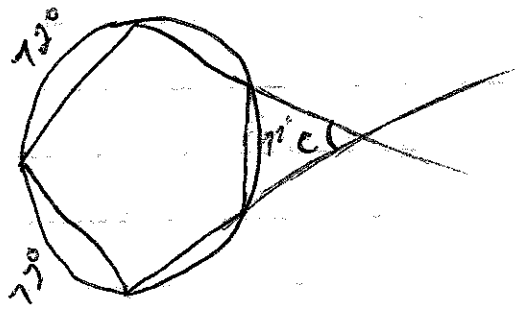
$y = 60°$

②




$z = \frac{180 - 60}{2}$ (∠ extérieur au cercle)

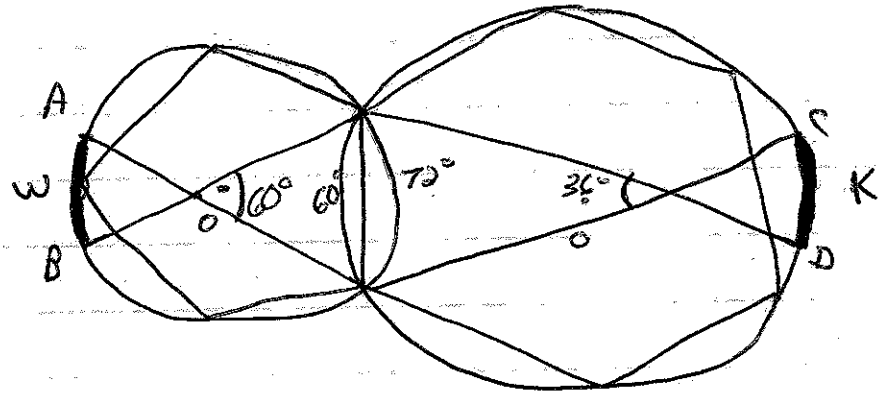
$= 60°$




$c = \frac{144 - 72}{2}$ (∠ ext. au cercle)

$c = 36°$

Revenons à la figure initiale




$\frac{w + 72}{2} = 60$

$w = 60 \times 2 - 72$

$w = 48°$

$\overset{\frown}{AB} = 48°$

$\frac{K + 60}{2} = 36$

$K = 36 \times 2 - 60$

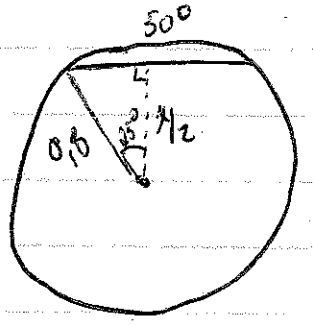
$K = 12°$

$\overset{\frown}{CD} = 12°$

14. $C = 2\pi r$

$\frac{1,6\pi}{2\pi} = \frac{2\pi r}{2\pi}$

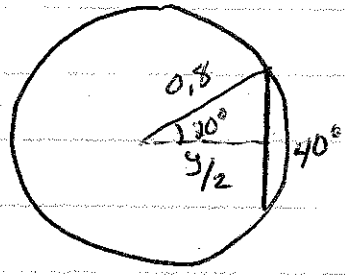
$0,8\text{ m} = r$




$\cos 25° = \frac{x/2}{0,8}$

$0,8 \cos 25° \times 2 = \frac{x}{2} \times 2$

$x = 1,45\text{ m}$

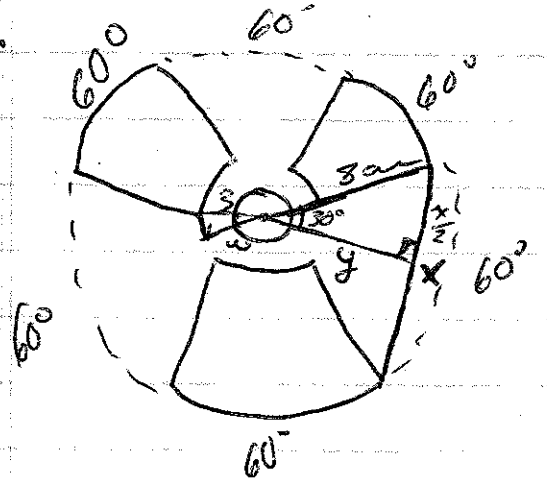



$\cos 20° = \frac{y/2}{0,8}$

$0,8 \cos 20° \times 2 = \frac{y}{2} \times 2$

$1,50\text{ m} = y$

15.




~~$\sin 30° = \frac{x/2}{8}$~~

$\cos 30° = \frac{y}{8}$

$8 \cos 30° = y$

$y = 6,93\text{ cm}$

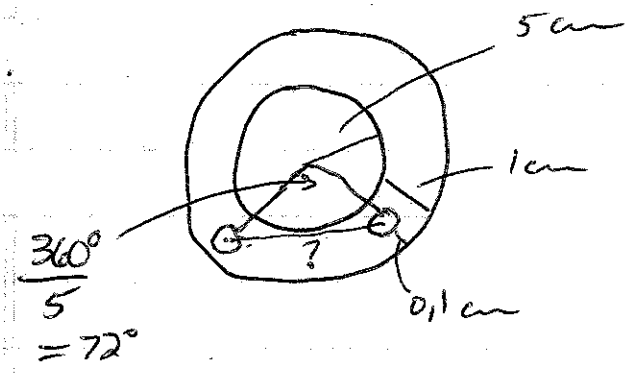
$\cos 30° = \frac{w}{3}$

$w = 3 \cos 30°$

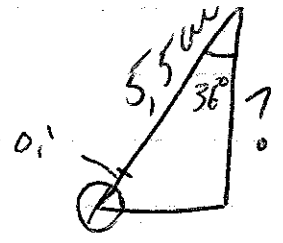
$w = 2,60\text{ cm}$

$6,93 - 2,60 = 4,33\text{ cm}$

16.




$\frac{360°}{5} = 72°$

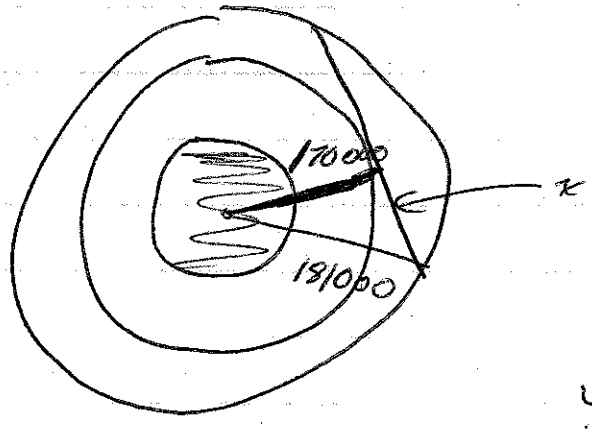



$\cos 36° = \frac{x}{5,5}$

$5,5 \cos 36° = x$

$x = 4,45 \text{ cm}.$

18.




$x^2 + 170000^2 = 181000^2$

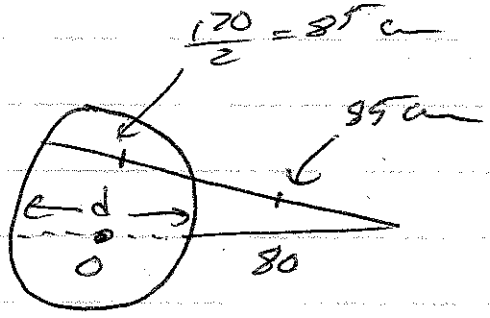
$x^2 = 3861000000$

$x = 62136 \text{ Km}$

$y = 2x = 2(62136)$

$= 124272 \text{ Km}.$

p.528 12.



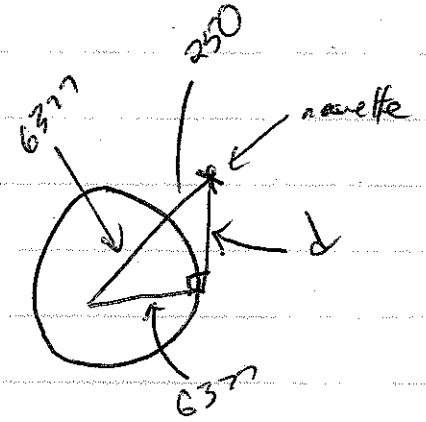

$85 \times (170) = 80(80+d)$

$14450 = 6400 + 80d$

$\frac{8050}{80} = \frac{80d}{80}$

$d = 100,625 \text{ cm}$.

14.

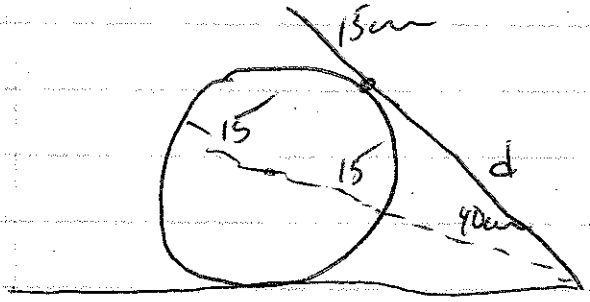



$d^2 + 6377^2 = (6377+250)^2$

$d^2 = 3\,251\,000$

$d = 1803 \text{ km}$

18.




$d^2 = 40(40+30)$

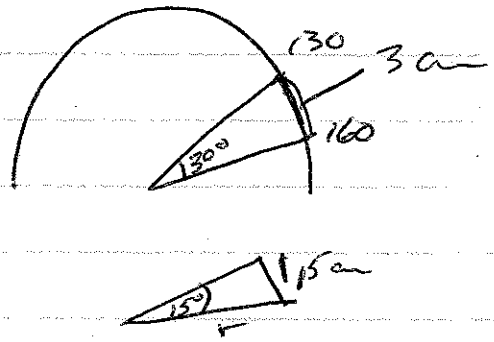
$d^2 = 40 \times 70$

$d^2 = 2800$

$d = 52,92 \text{ cm}$

$52,92 + 15 = 67,92 \text{ cm}$

14. a)

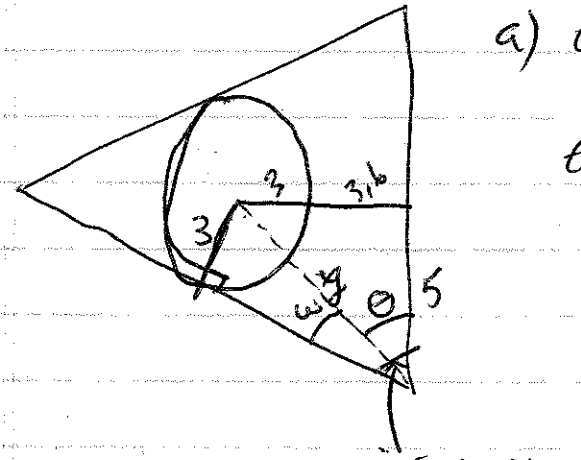



$\sin 15° = \frac{1,5}{r}$

$r = \frac{1,5}{\sin 15°}$

$r = 5,8\ cm.$

22.




a) $tg\,\theta = \frac{6,6}{5}$

$tg\,\theta = 1,32$

$\theta = 52,9°$

$6,6^2 + 5^2 = y^2$

$y^2 = 68,56$

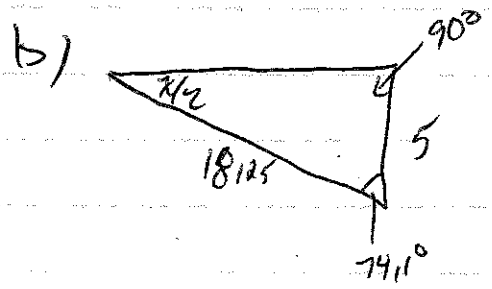
$y = 8,28\ m$

$\sin w = \frac{3}{8,28} \Rightarrow w = 21,2°$

$\cos 74,1 = \frac{5}{d}$

$d = 18,25\ m$

b)

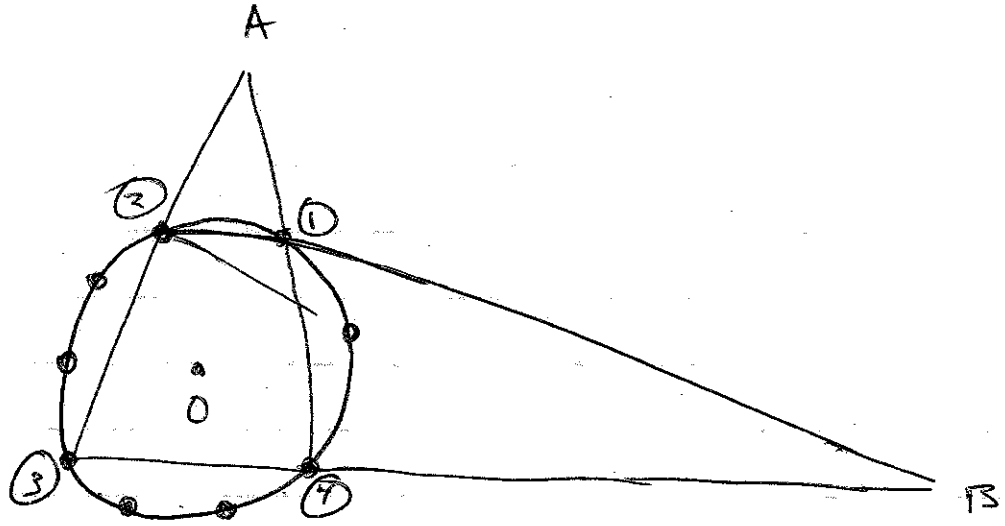



$90 + 74,1 + \frac{x}{2} = 180$

$\frac{x}{2} = 15,9$

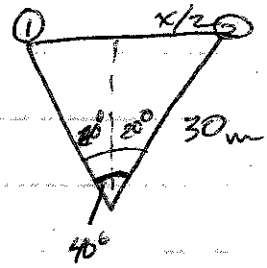
$x = 31,8°$

24




Chaque Arc : $\frac{360}{9} = 40°$

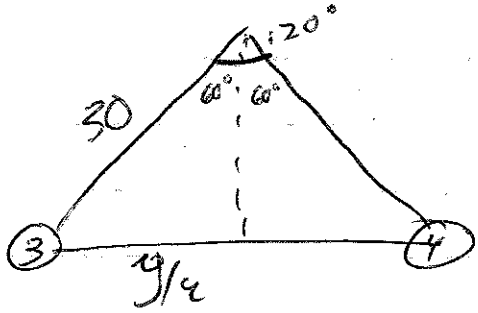
a)




$\sin 20° = \frac{x/2}{30}$

$30 \sin 20° \times 2 = \frac{x}{2} \times 2$

$20,52m = x$

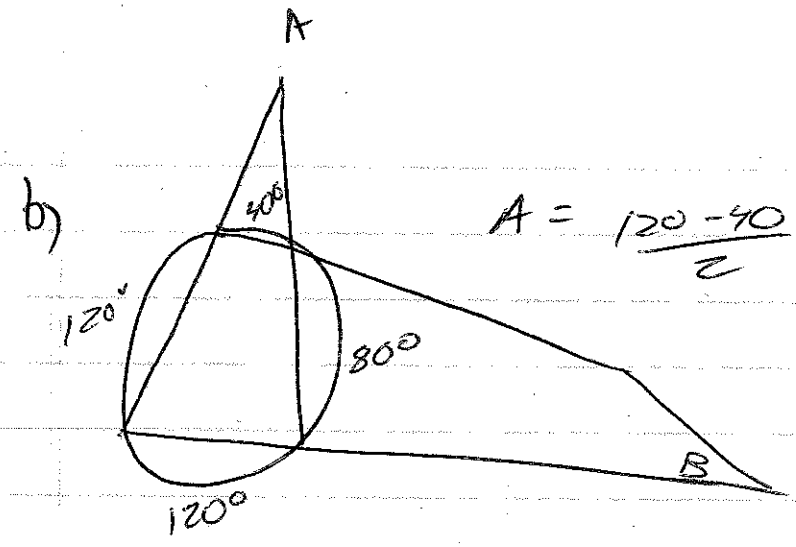



$\sin 60° = \frac{y/2}{30}$

$30 \sin 60° \times 2 = y$

$51,96m = y$

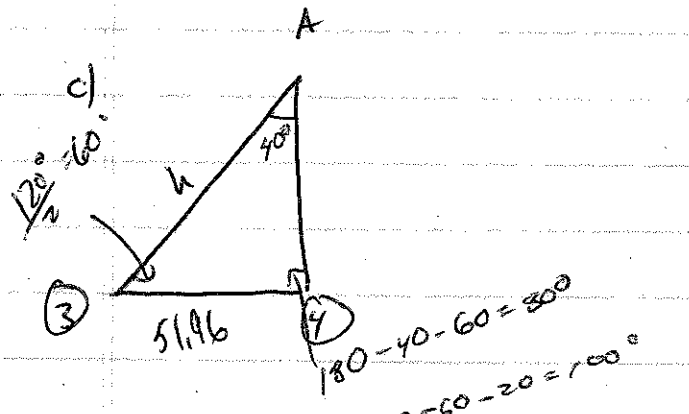
b)



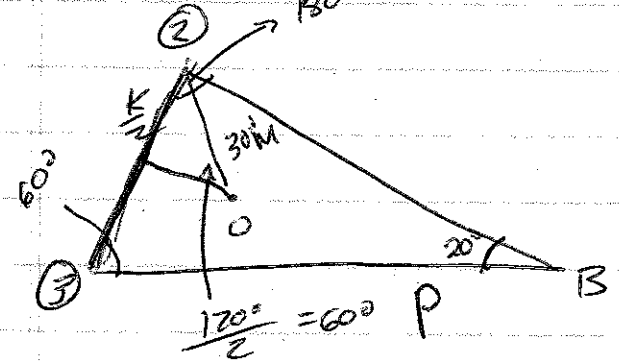

$A = \frac{120-40}{2} = 40°$

$B = \frac{120-80}{2} = 20°$

c)




$\frac{h}{\sin 80} = \frac{51,96}{\sin 40°} \Rightarrow h = 79,6$

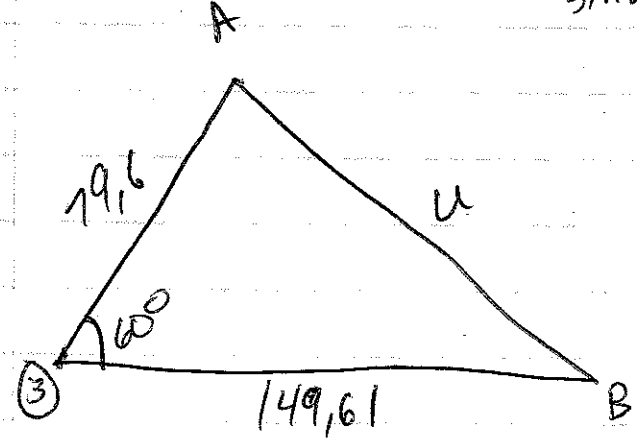



$\frac{K/2}{30} = \sin 60$

$K = 60 \sin 60$

$K = 51,96m$

$\frac{51,96}{\sin 20} = \frac{P}{\sin 100°}$ $P = 149,61m$




$u^2 = 79,6^2 + 149,61^2 - 2(79,6)(149,61)\cos 60$

$u^2 = 16810$

$u = 129,65m$