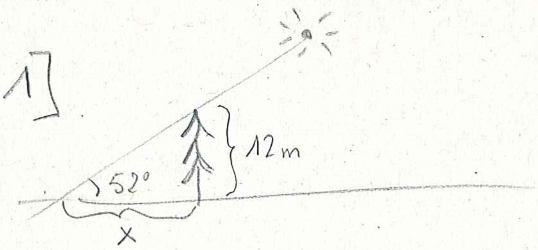
Ex Ch 3

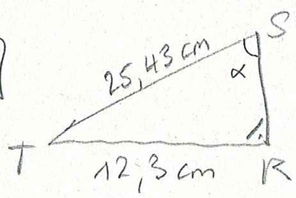
1]



$\tan(52) = \frac{12}{x}$

$x = \frac{12}{\tan(52)} \cong 9,38$ m

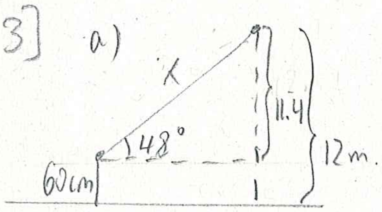
2]



$\overline{SR} = \sqrt{25,43^2 + 12,3^2} \cong 22,3$ cm

$\alpha = \sin^{-1}\left(\frac{12,3}{25,43}\right) \cong 28,93°$

3] a)



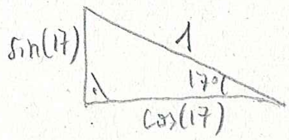
b) $\sin(48) = \frac{11,4}{x}$

$x = \frac{11,4}{\sin(48)} \cong 15,34$ m

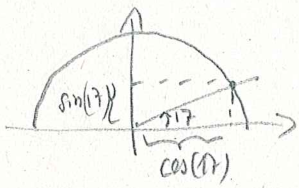
4] a) $\sin(17°) \cong 0,2924$
$\cos(17°) \cong 0,9563$

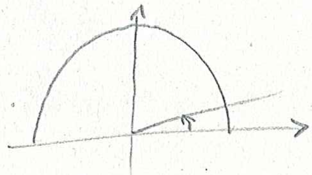
b) $\sin(1°) \cong 0,0175$
$\cos(1°) \cong 0,9998$

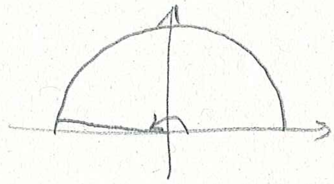
c) $\sin(179°) \cong 0,0175$
$\cos(179°) \cong -0,9998$



ou

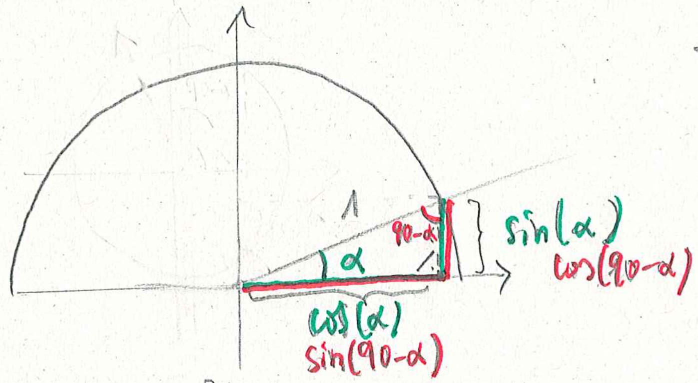




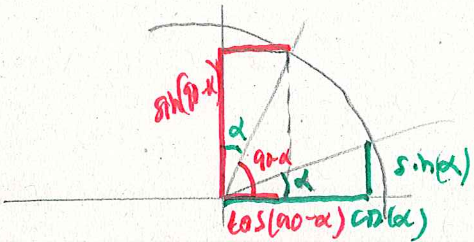


5] a) $\alpha \cong 61,97°$
b) $\alpha \cong 118,03°$
c) $\alpha \cong 28,03°$
d) $\alpha = 135°$
e) $\alpha = 45°$

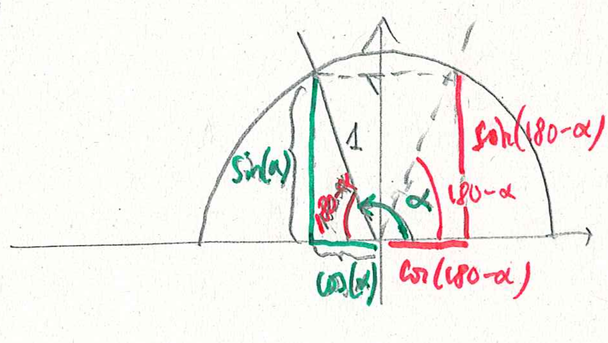
6]



ou

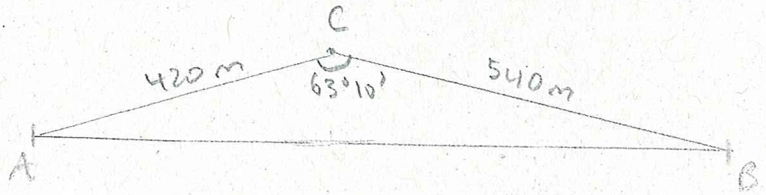


7]



ex9

triangulation ...

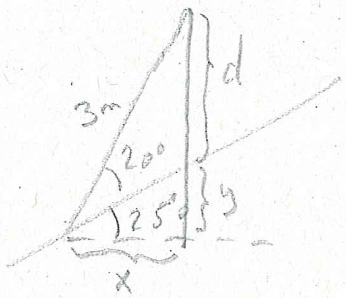


$$\gamma = 63°10' = 63°\tfrac{10}{60} = 63{,}1\bar{6}°$$

$$\overline{AB}^2 = 420^2 + 540^2 - 2\cdot 420\cdot 540 \cos(63{,}1\bar{6}) \triangleq 263240{,}4$$

$$\overline{AB} \triangleq 513{,}075 \text{ m}$$

ex10



- $\sin(45°) = \frac{d+y}{3}$

  $d+y = 3\sin(45°) = 3\frac{\sqrt{2}}{2}$ m
- $\cos(45) = \frac{x}{3}$

  $x = 3\cos(45) = \frac{3\sqrt{2}}{2}$ m
- $\tan(25) = \frac{y}{x}$

  $y = \frac{3\sqrt{2}}{2}\tan(25)$
- $d = 3\frac{\sqrt{2}}{2} - \frac{3\sqrt{2}}{2}\tan(25) = \frac{3\sqrt{2}}{2}(1-\tan(25))$

  $\triangleq 1{,}13$ m

Ch 3 ΠA2

ex8 a) thm cos : $c^2 = a^2 + b^2 - 2ab\cos(\gamma)$

$\hookrightarrow c \cong 41{,}92$

thm cos : $a^2 = b^2 + c^2 - 2bc\cos(\alpha)$

$\hookrightarrow \alpha = \cos^{-1}\left(\dfrac{a^2 - b^2 - c^2}{-2bc}\right)$

$\alpha \cong 58{,}79°$

$\Sigma \angle \Delta = 180$: $\beta = 180 - \alpha - \gamma$

$\beta \cong 90{,}52°$

b) $\Sigma \angle \Delta = 180$: $\alpha = 180 - \beta - \gamma$

$\alpha = 82{,}37°$

thm sinus : $\dfrac{\sin(\alpha)}{a} = \dfrac{\sin(\beta)}{b}$

$\hookrightarrow b = \dfrac{a\sin(\beta)}{\sin(\alpha)} \cong 17{,}55$

thm sinus : $\dfrac{\sin(\alpha)}{a} = \dfrac{\sin(\gamma)}{c}$

$\hookrightarrow c = \dfrac{a\sin(\gamma)}{\sin(\alpha)} \cong 13{,}10$

c) vérif : $a + b > c$ ok

thm cos : $\alpha = \cos^{-1}\left(\dfrac{a^2 - b^2 - c^2}{-2bc}\right)$

$\alpha \cong 22{,}99°$

thm cos : $\beta = \cos^{-1}\left(\dfrac{b^2 - a^2 - c^2}{-2ac}\right)$

$\beta \cong 64{,}50°$

$\Sigma \angle \Delta = 180$: $\gamma = 180 - \alpha - \beta$

$\gamma \cong 92{,}51°$

d) ⚠ il peut y avoir 2 solutions, ou aucune, ou une unique !

__Thm cos:__ $b^2 = a^2 + c^2 - 2ac\cos(\beta)$

$\Leftrightarrow c^2 - 2a\cos(\beta)\cdot c + (a^2 - b^2) = 0$

$\Leftrightarrow c^2 - 168,72\,c + (-122909,36) = 0$

$c_1 \cong 444,95 \quad \cancel{c_2 \cong -276,23}$

__Thm cos:__ $\alpha = \cos^{-1}\left(\frac{a^2 - b^2 - c^2}{-2bc}\right)$

$\alpha \cong 7,89°$

__$\Sigma \alpha \Delta = 180$:__ $\gamma = 180 - \alpha - \beta$

$\gamma \cong 141,46°$

e) idem d) ⚠

__Thm cos:__

$c^2 - 2a\cos(\beta)\cdot c + (a^2 - b^2) = 0$

$c^2 - 711,44\,c + 99108,17 = 0$

$\cancel{c_1 \cong -190,1} \quad \cancel{c_2 \cong -521,34}$

pas de solution !

h) idem d) ... ⚠

__Thm cos:__ $c^2 - 2a\cos(\beta)\cdot c + (a^2 - b^2) = 0$

$c^2 - 665,84\,c + 66830,56 = 0$

$\underbrace{c_1 \cong 542,69}_{1^{ère}\text{ sol.}} \quad \Big| \quad \underbrace{c_2 \cong 123,15}_{2^{ème}\text{ sol}}$

__Thm cos:__ $\gamma = \cos^{-1}\left(\frac{c^2 - a^2 - b^2}{-2ab}\right)$ | idem

$\gamma \cong 140,79°$ | $\gamma \cong 8,25°$

__$\Sigma \alpha \Delta = 180$:__ $\alpha = 180 - \beta - \gamma$ | $\alpha \cong 156,27°$

$\alpha \cong 23,73°$