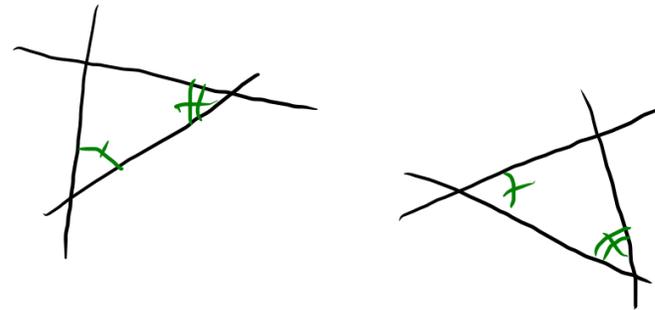
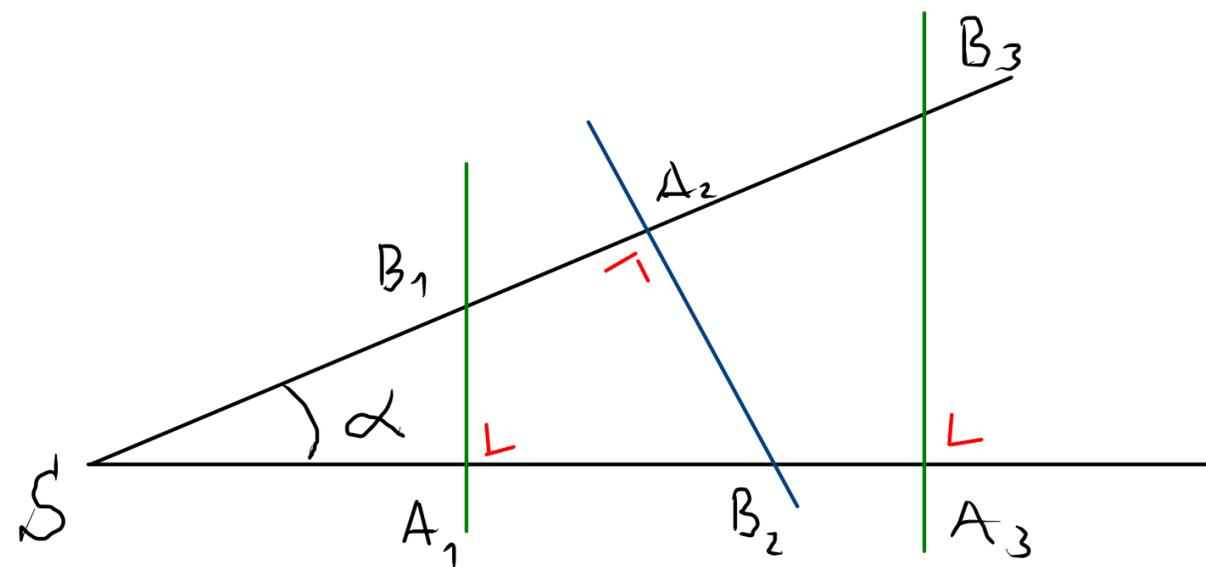


12.02.19

# Le triangle rectangle



Soit  $\alpha$  un angle de sommet  $S$ .

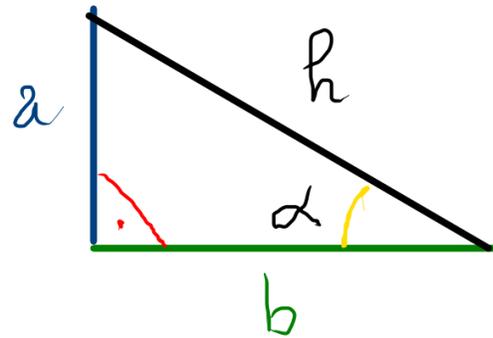
$$\underbrace{\triangle SA_1B_1 \cup \triangle SA_2B_2 \cup \triangle SA_3B_3}$$

$$\frac{SA_1}{SB_1} = \frac{SA_2}{SB_2} = \frac{SA_3}{SB_3} = \cos(\alpha)$$

$$\frac{A_1B_1}{SB_1} = \frac{A_2B_2}{SB_2} = \frac{A_3B_3}{SB_3} = \sin(\alpha)$$

$$\frac{A_1B_1}{SA_1} = \frac{A_2B_2}{SA_2} = \frac{A_3B_3}{SA_3} = \tan(\alpha)$$

# Formules



$$\sin(\alpha) = \frac{a}{h} = \frac{\text{cathète opposé}}{\text{hypoténuse}}$$

$$\cos(\alpha) = \frac{b}{h} = \frac{\text{cathète adjacent}}{\text{hypoténuse}}$$

$$\tan(\alpha) = \frac{a}{b} = \frac{\text{cathète opposé}}{\text{cathète adjacent}}$$

$$\begin{aligned} (\sin(\alpha))^2 + (\cos(\alpha))^2 &= \left(\frac{a}{h}\right)^2 + \left(\frac{b}{h}\right)^2 \\ &= \frac{a^2}{h^2} + \frac{b^2}{h^2} = \frac{a^2 + b^2}{h^2} \quad \text{pythagore} \\ &= \frac{h^2}{h^2} = 1 \end{aligned}$$

$$\sin^2(\alpha) + \cos^2(\alpha) = 1$$

$$\sin(55^\circ) = \frac{13,9}{15,6} \approx 0.891025641025641$$

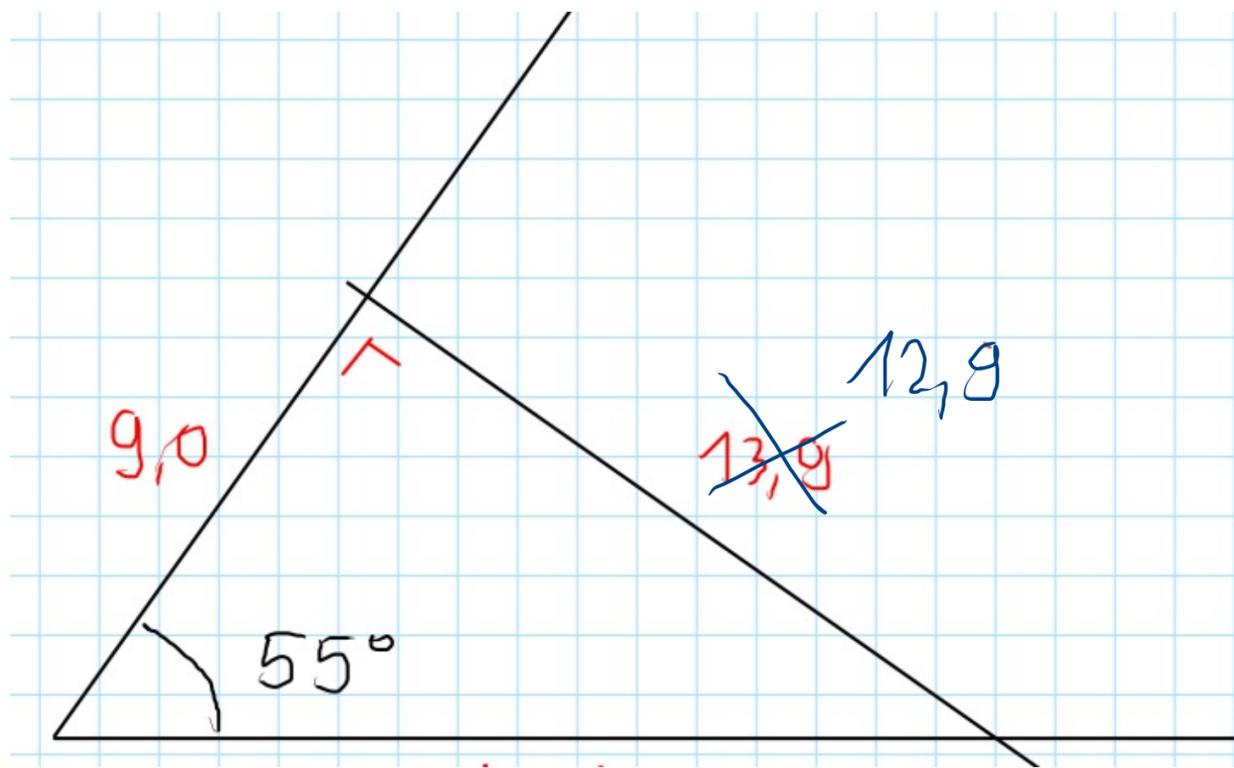
$$[\sin(55^\circ) = 0.819152044288992]$$

$$\cos(55^\circ) = \frac{9,0}{15,6} \approx 0.576923076923077$$

$$[\cos(55^\circ) = 0.573576436351046]$$

$$\tan(55^\circ) = \frac{13,9}{9,0} \approx 1.544444444444444$$

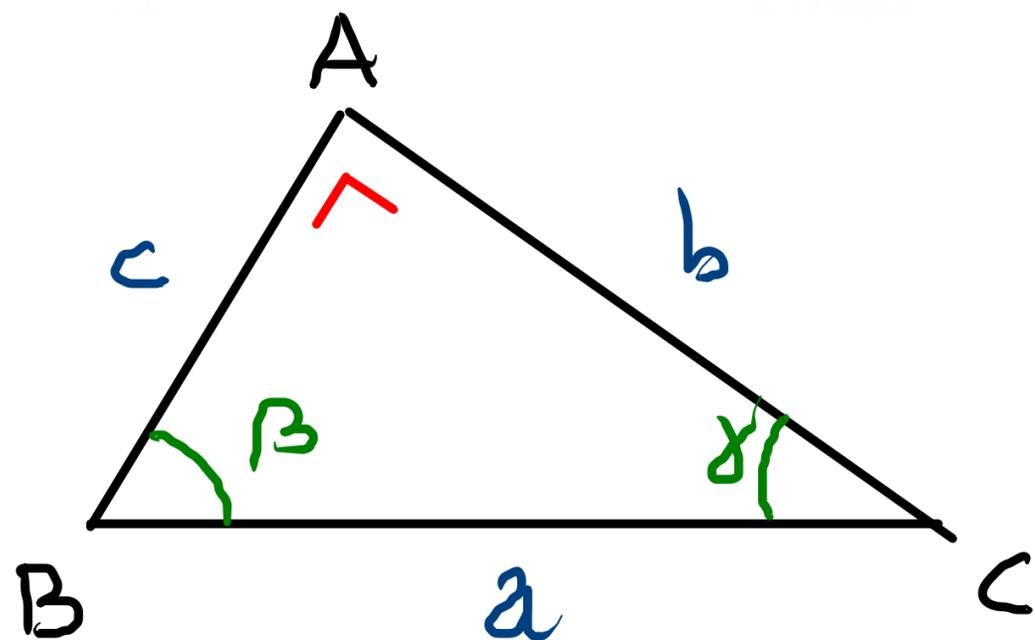
$$[\tan(55^\circ) = 1.428148006742115]$$



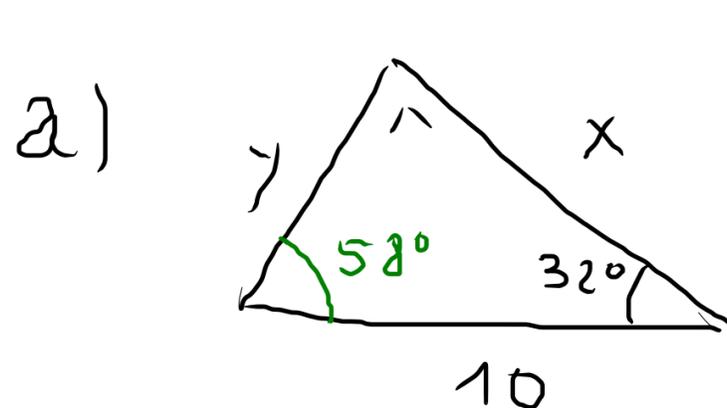
4.2.1 Un triangle rectangle  $ABC$  est rectangle en  $A$ . Résoudre ce triangle connaissant :

a)  $\gamma = 32^\circ$  et  $BC = 10$    b)  $\beta = 32^\circ$  et  $BC = 5$    c)  $\gamma = 27^\circ$  et  $AB = 10$

d)  $AC = 6$  et  $AB = 10$    e)  $\gamma = 64^\circ$  et  $AC = 12$    f)  $\beta = 45^\circ$  et  $BC = 12$



$$\frac{6}{3} = 2$$



$$\textcircled{1} \quad \cos(32^\circ) = \frac{x}{10}$$

$$\Rightarrow x = 10 \cdot \cos(32^\circ) \approx 8,48$$

$$\textcircled{2} \quad \sin(32^\circ) = \frac{y}{10} \quad \Rightarrow \quad y = 10 \cdot \sin(32^\circ) = 5,30$$