Pág. 158. 1 a c

a) *hipotenusa* $= 25m$, *cateto opuesto a* α $7m$

$$sen\ \alpha = \frac{7}{25} = 0'28$$

$$\cos \alpha = \frac{x}{25} = \frac{24}{25} = 0'96$$

$$T.P. \quad 25^2 = 7^2 + x^2; \quad x^2 = 25^2 - 7^2; \quad x = \sqrt{25^2 - 7^2} = 24$$

$$tg\ \alpha = \frac{sen\ \alpha}{\cos \alpha} = \frac{0'28}{0'96} = 0'2917 \qquad o\ de\ otra\ forma \quad tg\ \alpha = \frac{7}{24} = 0'2917$$

De otra forma:

$$sen\ \alpha = \frac{7}{25} = 0'28$$

Usando la calculadora: $\alpha = arc\ sen\ 0'28 = 16'2602047....$

$\cos \alpha = 0'96$ *y* $tg\ \alpha = 0'2917$

c) *cateto opuesto a* $\alpha = 32m$, *cateto contiguo a* $\alpha = 60m$

$$tg\ \alpha = \frac{32}{60} = 0'5333$$

$$T.P. \quad a^2 = 60^2 + 32^2; \quad a = \sqrt{60^2 + 32^2} = 68$$

$$sen\ \alpha = \frac{32}{68} = 0'4706$$

$$\cos \alpha = \frac{60}{68} = 0'8824$$

De otra forma:

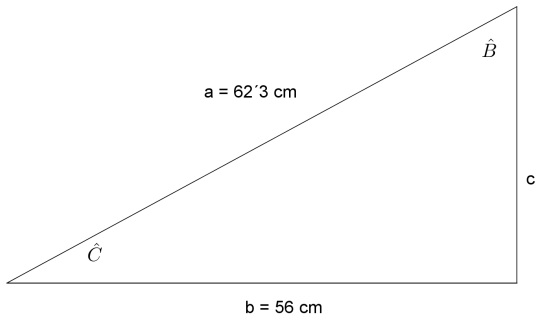
$$tg\ \alpha = \frac{32}{60} = 0'5333$$

Usando la calculadora: $\alpha = arc\ tg\ \frac{32}{60} = 28'0724869....$

$sen\ \alpha = 0'4706$

$\cos \alpha = 0'8824$

2 a



$$\cos \hat{C} = \frac{56}{62´3} = 0´8989$$

$$\hat{C} = \arccos \frac{56}{62´3} = 25´9892335...$$

$$sen\ \hat{C} = 0´4382$$

$$tg\ \hat{C} = 0´4875$$

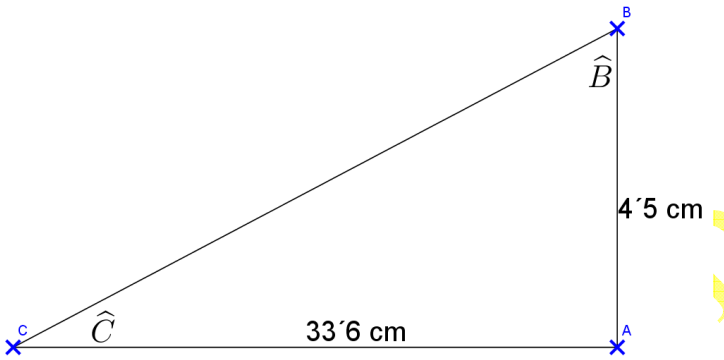
$$sen\ \hat{B} = \frac{56}{62´3} = 0´8989$$

$$\hat{B} = arcsen \frac{56}{62´3} = 64´0107664...$$

$$\cos \hat{B} = 0´4382$$

$$tg\ \hat{B} = 2´0513$$

2b)



$$tg\ \hat{C} = \frac{4´5}{33´6} = \frac{15}{112} = 0´1339$$

$$\hat{C} = arctg \frac{4´5}{33´6} = 7´6281...º$$

$$sen\ \hat{C} = \frac{15}{113} = 0´1327$$

$$\cos \hat{C} = \frac{112}{113} = 0´9912$$

$$tg\ \hat{B} = \frac{33´6}{4´5} = \frac{112}{15}$$

$$\hat{B} = arctg \frac{112}{15} = 82´3718....º$$

$$sen\ \hat{B} = \frac{112}{113} \quad y \quad \cos \hat{B} = \frac{15}{113}$$

5)

$$\cos \alpha = \frac{2}{3}$$

$$\alpha = \arccos \frac{2}{3} = 48´1896...º$$

$$sen\ \alpha = 0´7454 \qquad y \qquad tg\ \alpha = 1´1180$$

6) $tg\ \alpha = \sqrt{5}$

$$\alpha = arctg \sqrt{5} = 65´9051....º$$

$$sen\ \alpha = 0´9129 \quad y \quad \cos \alpha = 0´4082$$

13)

Altura del árbol = x

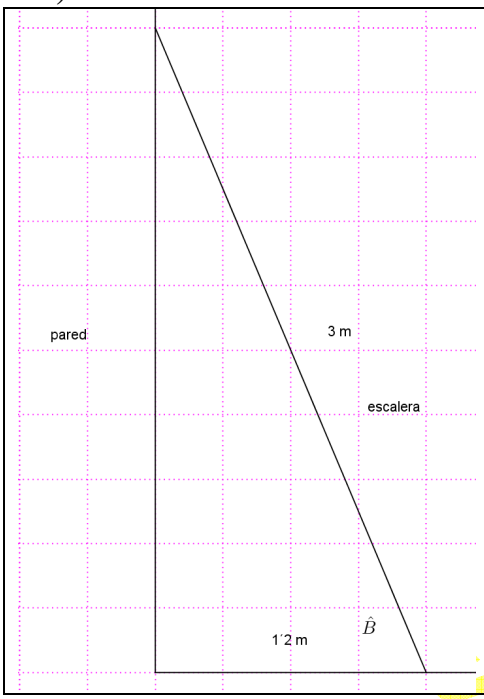
$$tg\ 40º = \frac{x}{18}$$

$$18 \cdot tg\ 40º = x$$

$$x = 15´1038$$

La altura del árbol es de 15´1038 m

14)



$$\cos \hat{B} = \frac{1´2}{3}$$

$$\hat{B} = \arccos \frac{1´2}{3} = 66´4218º$$

La escalera con el suelo forma un ángulo de 66´4218º.

Pág. 159, 18.