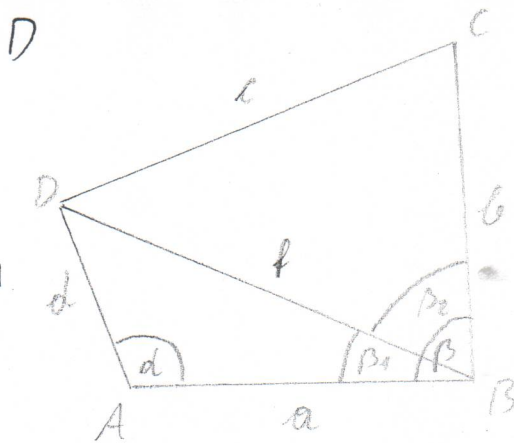


$$1) a) f = \sqrt{a^2 + d^2 - 2ad \cdot \cos \alpha}$$

$$f = \sqrt{70^2 + 20^2 - 2 \cdot 70 \cdot 20 \cdot \cos 110,49^\circ}$$

$$f \approx \underline{\underline{79,2 \text{ m}}}$$



$$b) \sin \beta_1 = \frac{\sin 110,49^\circ}{79,2} \cdot 20$$

$$\beta_1 \approx \underline{\underline{13,67^\circ}}$$

$$\beta_2 = \beta - \beta_1$$

$$\beta_2 \approx \underline{\underline{50,58^\circ}}$$

$$c = \sqrt{b^2 + f^2} = 2bf \cdot \cos \beta_2$$

$$c = \sqrt{54^2 + 79,2^2 - 2 \cdot 54 \cdot 79,2 \cdot \cos 50,58^\circ}$$

$$c \approx \underline{\underline{61,3 \text{ m}}}$$

$$\underline{\underline{u \approx 205,3 \text{ m}}}$$

$$c) A_1 = \frac{70 \cdot 20}{2} \cdot \sin 110,49^\circ \approx 655,71 \text{ m}^2$$

$$A_2 = \frac{54 \cdot 79,2}{2} \cdot \sin 50,58^\circ \approx 1652,81 \text{ m}^2$$

$$\underline{\underline{A \approx 2308,53 \text{ m}^2}}$$

$$A \cdot 24 \text{ €/m}^2 \approx \underline{\underline{55404,6 \text{ €}}}$$

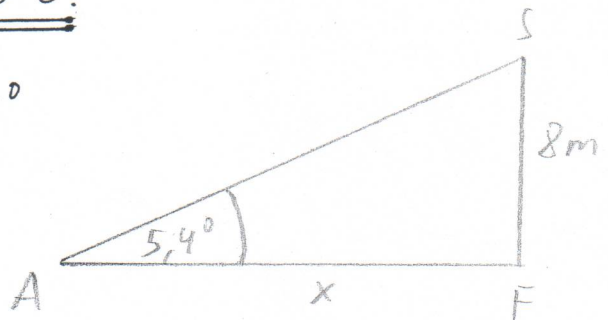
Das Grundstück kostet 55405 €.

$$d) \tan 5,4^\circ = \frac{8}{x} \quad | \cdot x : \tan 5,4^\circ$$

$$x = \frac{8}{\tan 5,4^\circ}$$

$$x \approx \underline{\underline{84,6 \text{ m}}}$$

Die Stromleitung ist fast 85 m lang.



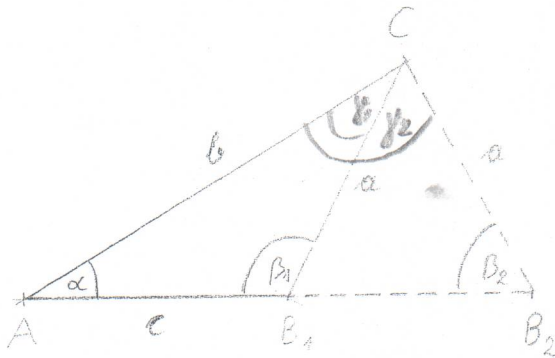
D

$$2) \sin \beta = \frac{\sin 30^\circ}{3,5} \cdot 6$$

$$\underline{\beta_2 \approx 59,0^\circ} \quad \gamma_2 \approx 31,0^\circ$$

$$\beta_1 = 180^\circ - \beta_2$$

$$\underline{\beta_1 \approx 121^\circ} \quad \gamma_1 \approx 29,0^\circ$$



$$3) A = (2|1)$$

$$r = \sqrt{2^2 + 1^2}$$

$$r \approx 2,2$$

$$\tan \varphi = \frac{1}{2}$$

$$\varphi \approx 26,6^\circ$$

$$\underline{\underline{A = [2,2|26,6^\circ]}}$$

$$B = (-3|4)$$

$$r = \sqrt{3^2 + 4^2}$$

$$r = 5$$

$$\tan \varphi' = \frac{4}{-3}$$

$$\varphi' \approx -53,1^\circ$$

$$\varphi = 180^\circ + \varphi'$$

$$\varphi \approx 126,9^\circ$$

$$\underline{\underline{B = [5|126,9^\circ]}}$$

$$4) \vec{BA} = -\frac{1}{2} \vec{BD} = \frac{1}{2} (D - B) = -\frac{1}{2} \left( \begin{pmatrix} 6 \\ -5 \end{pmatrix} - \begin{pmatrix} -2 \\ -5 \end{pmatrix} \right) = -\frac{1}{2} \begin{pmatrix} 8 \\ 0 \end{pmatrix} = \begin{pmatrix} -4 \\ 0 \end{pmatrix}$$

$$\vec{BF} = \begin{pmatrix} 0 \\ -3 \end{pmatrix} - \begin{pmatrix} -2 \\ -5 \end{pmatrix} = \begin{pmatrix} 2 \\ 2 \end{pmatrix}$$

$$A = B + \vec{BA} = \begin{pmatrix} -2 \\ -5 \end{pmatrix} + \begin{pmatrix} -4 \\ 0 \end{pmatrix} = \begin{pmatrix} -6 \\ -5 \end{pmatrix}$$

$$E = A + \vec{BF} = \begin{pmatrix} -6 \\ -5 \end{pmatrix} + \begin{pmatrix} 2 \\ 2 \end{pmatrix} = \begin{pmatrix} -4 \\ -3 \end{pmatrix}$$

$$H = E + \vec{BF} = \begin{pmatrix} -4 \\ -3 \end{pmatrix} + \begin{pmatrix} 2 \\ 2 \end{pmatrix} = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$$

$$\underline{\underline{A = (-6|-5) \quad E = (-4|-3) \quad H = (-2|-1)}}$$

$$5) \begin{pmatrix} -12 \\ 35 \end{pmatrix} \rightarrow \text{rechts} \rightarrow \begin{pmatrix} 35 \\ 12 \end{pmatrix}$$

$$\left| \begin{pmatrix} 35 \\ 12 \end{pmatrix} \right| = 37$$

$$\text{Länge 148: } \begin{pmatrix} 35 \\ 12 \end{pmatrix} \cdot \frac{148}{37} = \underline{\underline{\begin{pmatrix} 140 \\ 48 \end{pmatrix}}}$$