

République Algérienne Démocratique et Populaire

وزارة التعليم العالي والبحث العلمي

Ministère de l'Enseignement Supérieur et de la Recherche Scientifique

Centre Universitaire de Maghnia



## TOPOGRAPHIE 02

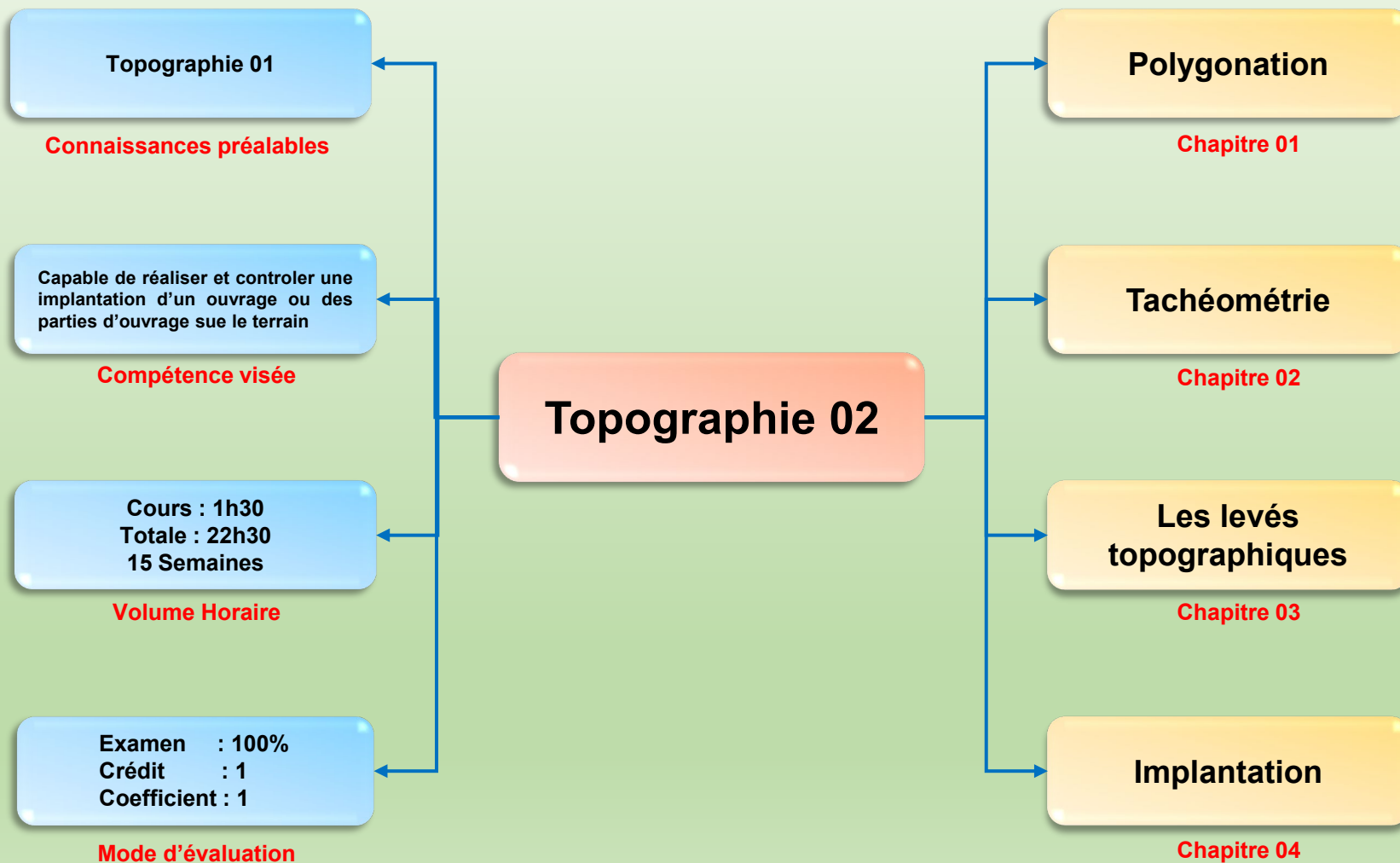
### POLYGONATION-APPLICATION



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# Description Générale de Matière



# POLYGONATION

## Exercice 01

Un terrain ABCD défini dans un système de coordonnées local par les données suivantes :

$$XA = 200225.989 \text{ m}$$

$$YA = 288014.490 \text{ m}$$

$$XB = 200223.499 \text{ m}$$

$$YB = 287986.908 \text{ m}$$

$$XC = 200210.739 \text{ m}$$

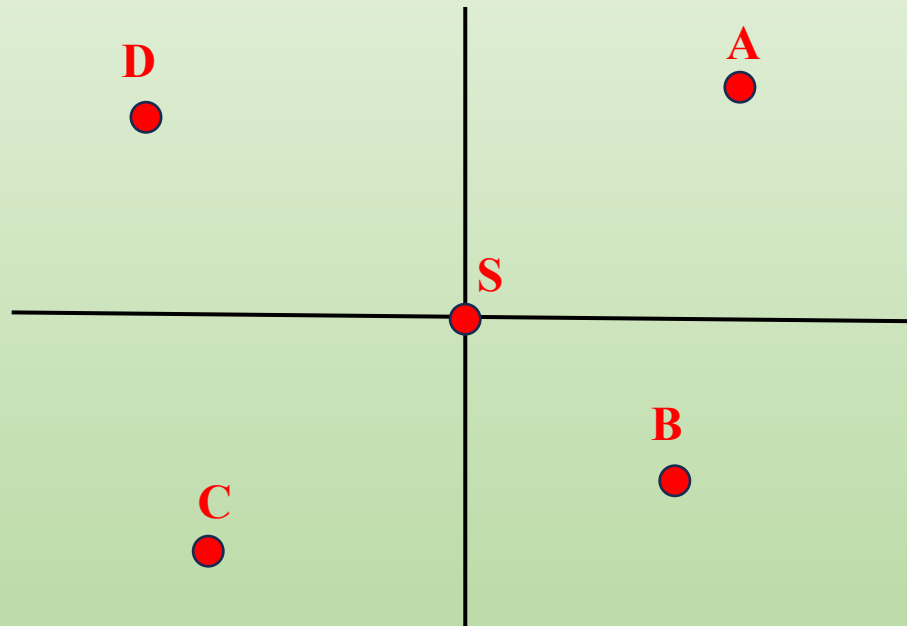
$$YC = 287988.077 \text{ m}$$

$$XD = 200204.192 \text{ m}$$

$$YD = 288011.150 \text{ m}$$

$$XS = 200218.134 \text{ m}$$

$$YS = 288000.885 \text{ m}$$



☐ Calculer les gisements  $G_{SA}$ ,  $G_{SB}$ ,  $G_{SC}$ ,  $G_{SD}$

☐ Calculer les distances  $D_{SA}$ ,  $D_{SB}$ ,  $D_{SC}$ ,  $D_{SD}$

# POLYGONATION

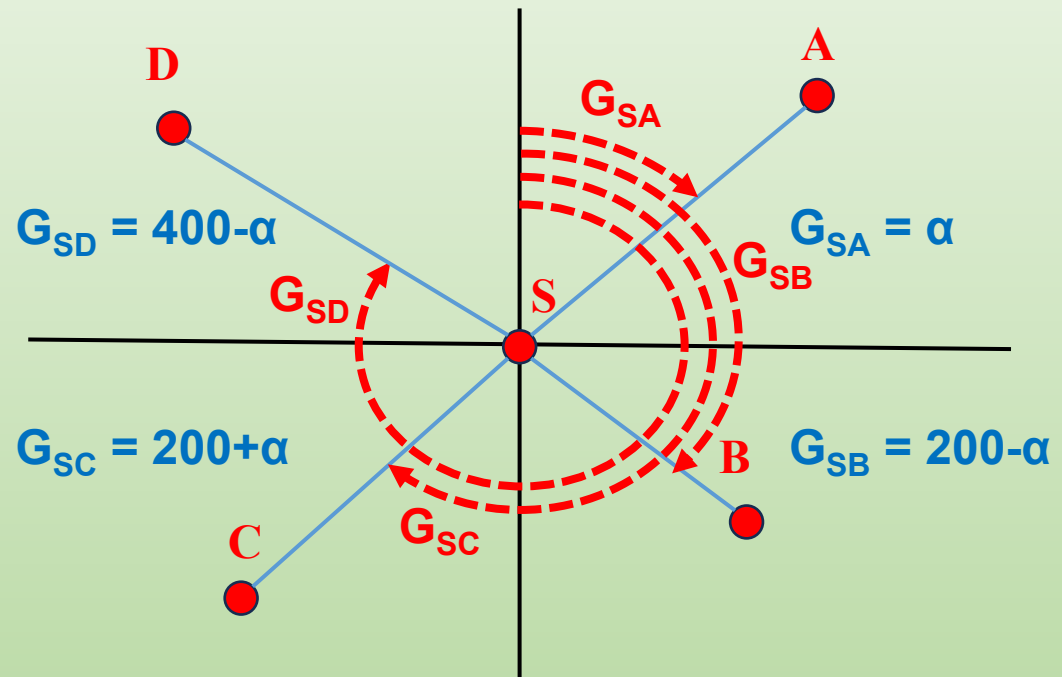
## Exercice 01

$$\operatorname{tg} \alpha = \left| \frac{\Delta_X}{\Delta_Y} \right|$$

$$\Delta_X = X_B - X_A$$

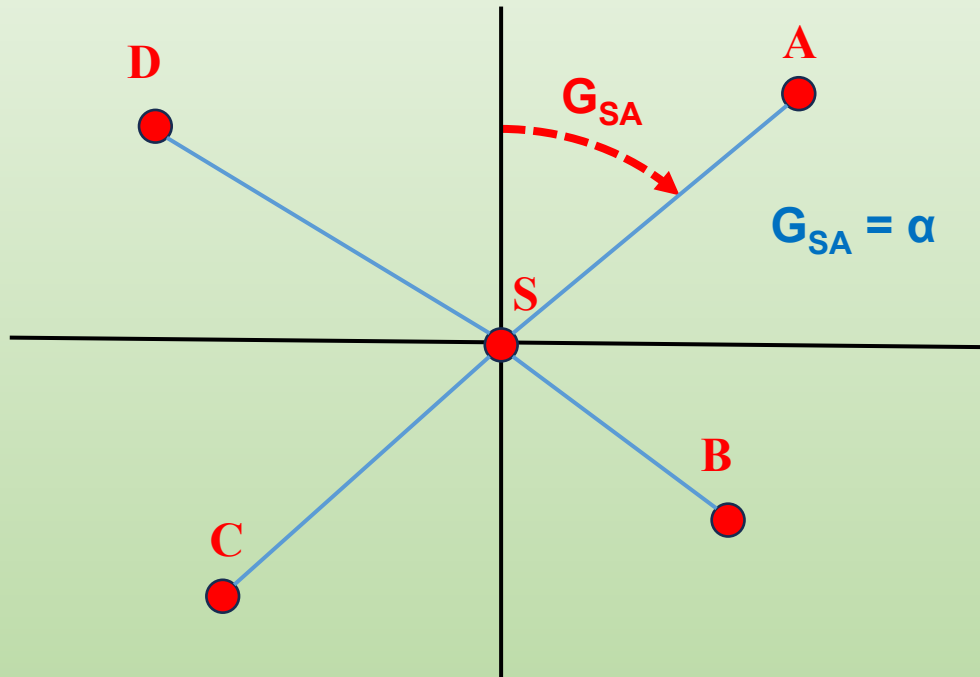
$$\Delta_Y = Y_B - Y_A$$

$$\alpha = \operatorname{tg}^{-1} \left| \frac{\Delta_X}{\Delta_Y} \right|$$



# POLYGONATION

## Exercise 01



$$\Delta_X = X_A - X_S$$

$$\Delta_X = 200225.989 - 200218.134$$

$$\Delta_X = 7.855 \text{ m}$$

$$\Delta_Y = Y_A - Y_S$$

$$\Delta_Y = 288014.490 - 288000.885$$

$$\Delta_Y = 13.605 \text{ m}$$

$$\text{tg} \alpha = \left| \frac{\Delta_X}{\Delta_Y} \right| \quad \alpha = \text{tg}^{-1} \left| \frac{\Delta_X}{\Delta_Y} \right|$$

$$\alpha = 33.3338 \text{ grad}$$

$$G_{SA} = \alpha = 33.3338 \text{ grad}$$

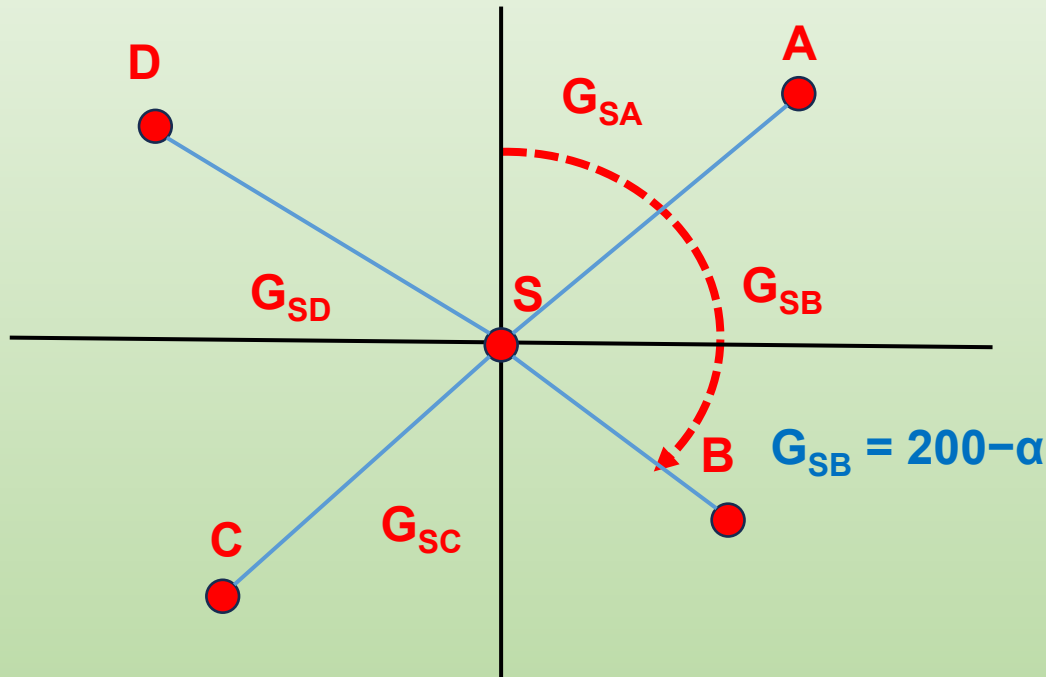
$$D^2 = (\Delta_X)^2 + (\Delta_Y)^2 \quad D = \sqrt{(\Delta_X)^2 + (\Delta_Y)^2}$$

$$D = \sqrt{(7.855)^2 + (13.605)^2}$$

$$D = 15.710 \text{ m}$$

# POLYGONATION

## Exercise 01



$$\Delta_X = X_B - X_S$$

$$\Delta_X = 200223.499 - 200218.134$$

$$\Delta_X = 5.365 \text{ m}$$

$$\Delta_Y = Y_B - Y_S$$

$$\Delta_Y = 287986.908 - 288000.885$$

$$\Delta_Y = -13.977 \text{ m}$$

$$\text{tg} \alpha = \left| \frac{\Delta_X}{\Delta_Y} \right| \quad \alpha = \text{tg}^{-1} \left| \frac{\Delta_X}{\Delta_Y} \right|$$

$$\alpha = 23.3322 \text{ grad}$$

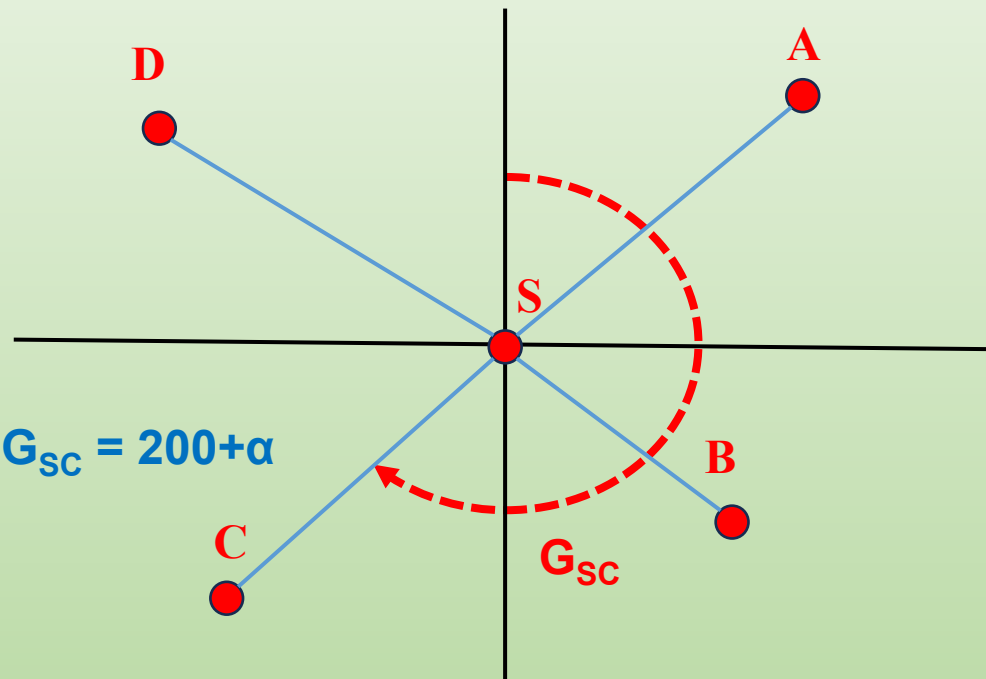
$$G_{SA} = 200 - \alpha = 176.6678 \text{ grad}$$

$$D^2 = (\Delta_X)^2 + (\Delta_Y)^2 \quad D = \sqrt{(\Delta_X)^2 + (\Delta_Y)^2}$$

$$D = \sqrt{(5.365)^2 + (-13.977)^2} \quad D = 14.971 \text{ m}$$

# POLYGONATION

## Exercise 01



$$\Delta_X = X_c - X_s$$

$$\Delta_X = 200210.739 - 200218.134$$

$$\Delta_X = -7.395 \text{ m}$$

$$\Delta_Y = Y_c - Y_s$$

$$\Delta_Y = 287988.077 - 288000.885$$

$$\Delta_Y = -12.808 \text{ m}$$

$$\text{tg} \alpha = \left| \frac{\Delta_X}{\Delta_Y} \right| \quad \alpha = \text{tg}^{-1} \left| \frac{\Delta_X}{\Delta_Y} \right|$$

$$\alpha = 33.3344 \text{ grad}$$

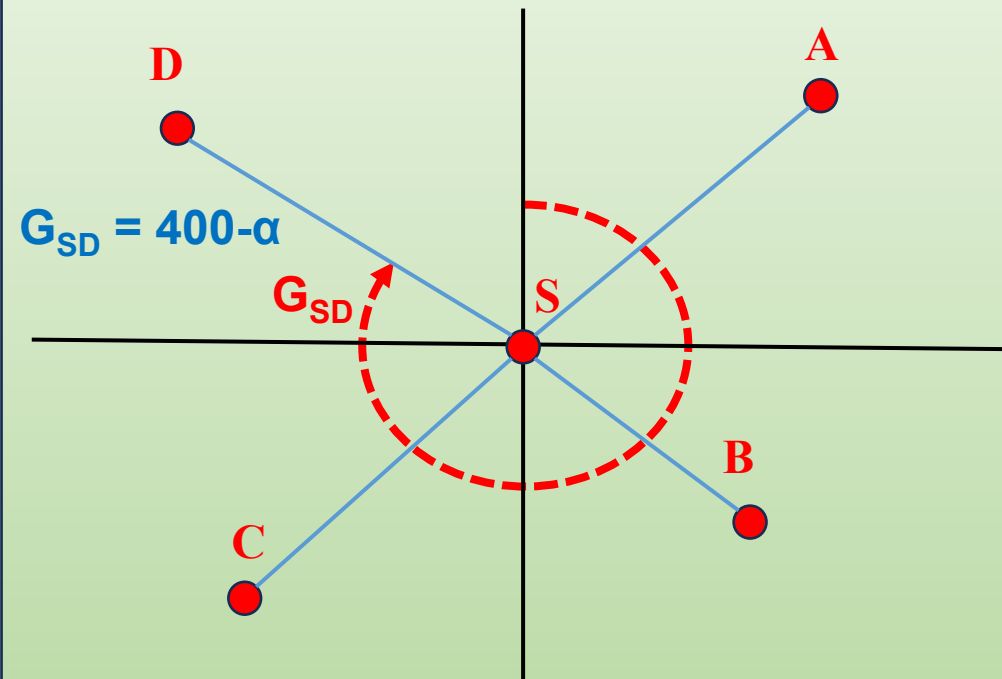
$$G_{SA} = 200 + \alpha = 233.3344 \text{ grad}$$

$$D^2 = (\Delta_X)^2 + (\Delta_Y)^2 \quad D = \sqrt{(\Delta_X)^2 + (\Delta_Y)^2}$$

$$D = \sqrt{(-7.395)^2 + (-12.808)^2} \quad D = 14.790 \text{ m}$$

# POLYGONATION

## Exercise 01



$$\Delta_X = X_D - X_S$$

$$\Delta_X = 200204.192 - 200218.134$$

$$\Delta_X = -13.942 \text{ m}$$

$$\Delta_Y = Y_D - Y_S$$

$$\Delta_Y = 288011.150 - 288000.885$$

$$\Delta_Y = 10.265 \text{ m}$$

$$\text{tg} \alpha = \left| \frac{\Delta_X}{\Delta_Y} \right| \quad \alpha = \text{tg}^{-1} \left| \frac{\Delta_X}{\Delta_Y} \right|$$

$$\alpha = 59.5967 \text{ grad}$$

$$G_{SA} = 400 - \alpha = 340.4033 \text{ grad}$$

$$D^2 = (\Delta_X)^2 + (\Delta_Y)^2 \quad D = \sqrt{(\Delta_X)^2 + (\Delta_Y)^2}$$

$$D = \sqrt{(-13.942)^2 + (10.265)^2} \quad D = 17.313 \text{ m}$$



# POLYGONATION

## Exercice 02

Point de départ “coordonnées de station S”.

$$XS = 200218.134 \text{ m}$$

$$YS = 288000.885 \text{ m}$$

$$G_{SA} = 33,3338 \text{ grad}$$

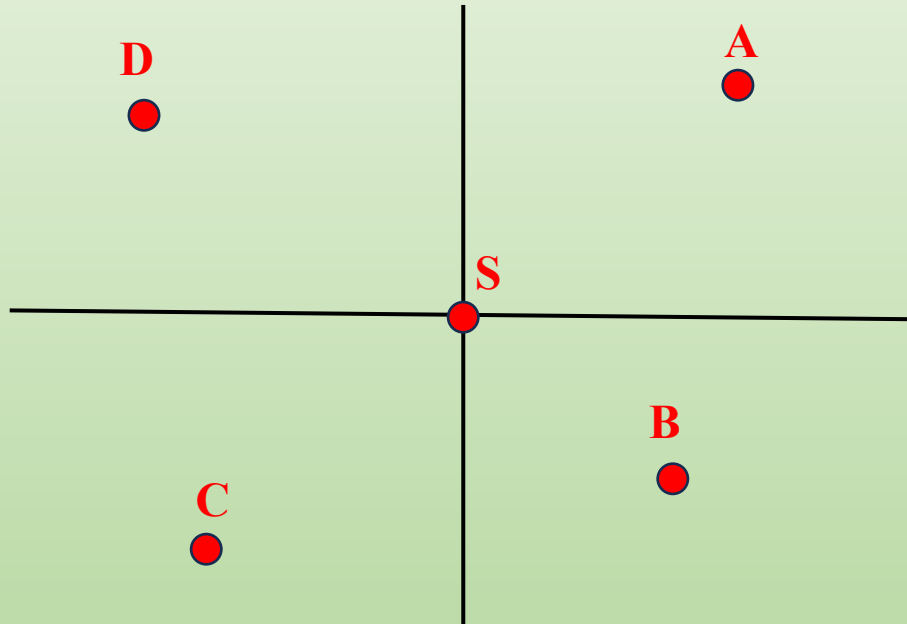
$$D_{SA} = 15,710 \text{ m}$$

$$G_{SB} = 176,6677 \text{ grad}$$

$$D_{SB} = 14,971 \text{ m}$$

$$G_{SC} = 233,3344 \text{ grad}$$

$$D_{SC} = 14,790 \text{ m}$$



☐ Calculer les coordonnées A, B, C



## POLYGONATION

### Exercice 02

Point de depart “S”.

$XS = 200218.134 \text{ m}$

$YS = 288000.885 \text{ m}$

$G_{SA} = 33,3338 \text{ grad}$

$DS_A = 15,710 \text{ m}$

$G_{SB} = 176,6677 \text{ grad}$

$DS_B = 14,971 \text{ m}$

$G_{SC} = 233,3344 \text{ grad}$

$DS_C = 14,790 \text{ m}$

❑ Calculer les coordonnées A, B, C

$$X_A = X_S + DS_A \times \sin G_{SA}$$

$$X_A = 200218.134 + 15.710 \times \sin 33.3338$$

$$X_A = 200225.989 \text{ m}$$

$$Y_A = Y_S + DS_A \times \cos G_{SA}$$

$$Y_A = 288000.885 + 15.710 \times \cos 33.3338$$

$$Y_A = 288014.490 \text{ m}$$

**A : (200225.989 ; 288014.490)**



## POLYGONATION

### Exercice 02

Point de depart “S”.

$X_S = 200218.134 \text{ m}$

$Y_S = 288000.885 \text{ m}$

$G_{SA} = 33,3338 \text{ grad}$

$D_{SA} = 15,710 \text{ m}$

$G_{SB} = 176,6677 \text{ grad}$

$D_{SB} = 14,971 \text{ m}$

$G_{SC} = 233,3344 \text{ grad}$

$D_{SC} = 14,790 \text{ m}$

❑ Calculer les coordonnées A, B, C

$$X_B = X_S + D_{SB} \times \sin G_{SB}$$

$$X_B = 200218.134 + 14.971 \times \sin 176.6677$$

$$X_B = 200223.499 \text{ m}$$

$$Y_B = Y_S + D_{SB} \times \cos G_{SB}$$

$$Y_B = 288000.885 + 14.97 \times \cos 176.6677$$

$$Y_B = 287986.908 \text{ m}$$

**B : (200223.499 ; 287986.908)**



## POLYGONATION

### Exercice 02

Point de depart “S”.

$X_S = 200218.134 \text{ m}$

$Y_S = 288000.885 \text{ m}$

$G_{SA} = 33,3338 \text{ grad}$

$D_{SA} = 15,710 \text{ m}$

$G_{SB} = 176,6677 \text{ grad}$

$D_{SB} = 14,971 \text{ m}$

$G_{SC} = 233,3344 \text{ grad}$

$D_{SC} = 14,790 \text{ m}$

❑ Calculer les coordonnées A, B, C

$$X_C = X_S + D_{SC} \times \sin G_{SC}$$

$$X_C = 200218.134 + 14.790 \times \sin 233.3344$$

$$X_C = 200210.739 \text{ m}$$

$$Y_C = Y_S + D_{SC} \times \cos G_{SC}$$

$$Y_C = 288000.885 + 14.790 \times \cos 233.3344$$

$$Y_C = 287988.077 \text{ m}$$

**C : (200210.739, 287988.077)**

# MERCI POUR VOTRE ATTENTION