



Nombre: Javier Andrés Monjes Solórzano

FISICA BASICA 2S2021

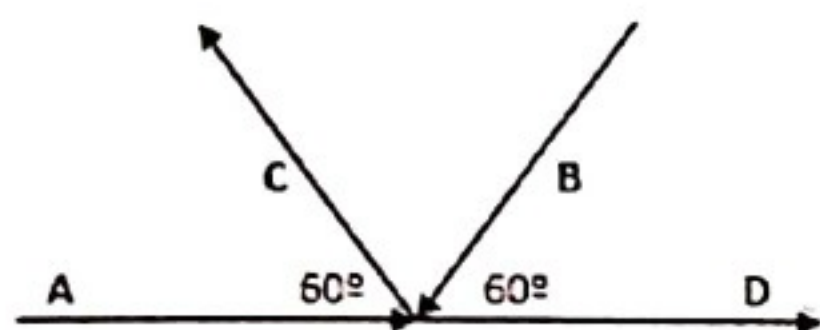
Carné: 202100081 Sección: Z

Entrega: viernes 06/08

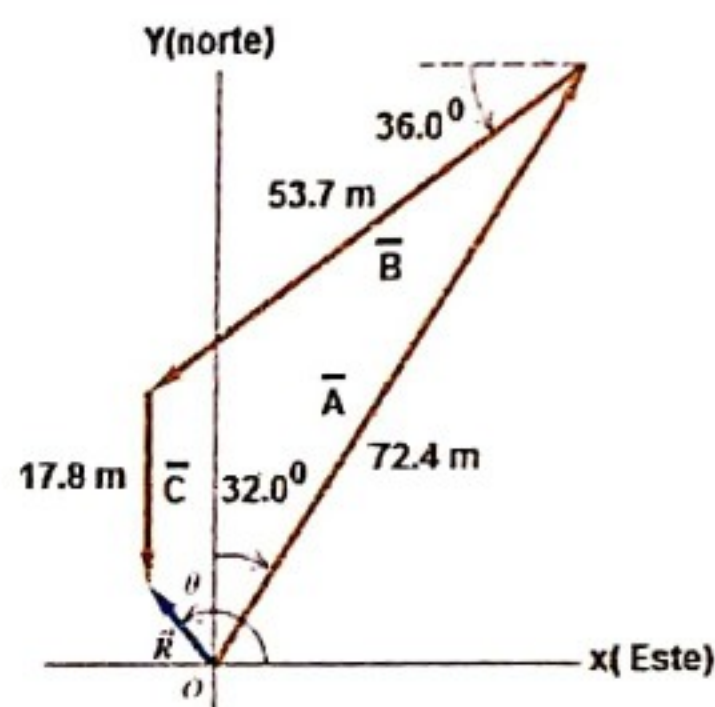
Profesor Bayron Armando Wyon

Auxiliar: Marcela Lyzeth Avila Smeur

1. Determine la magnitud y dirección del vector resultante de la suma de los 4 vectores mostrados en la figura, si la magnitud de cada uno de ellos es de 30 unidades. **R// 30, 0°**



2: Determinar el vector R (forma polar).
R// 13.1, + 112.9°



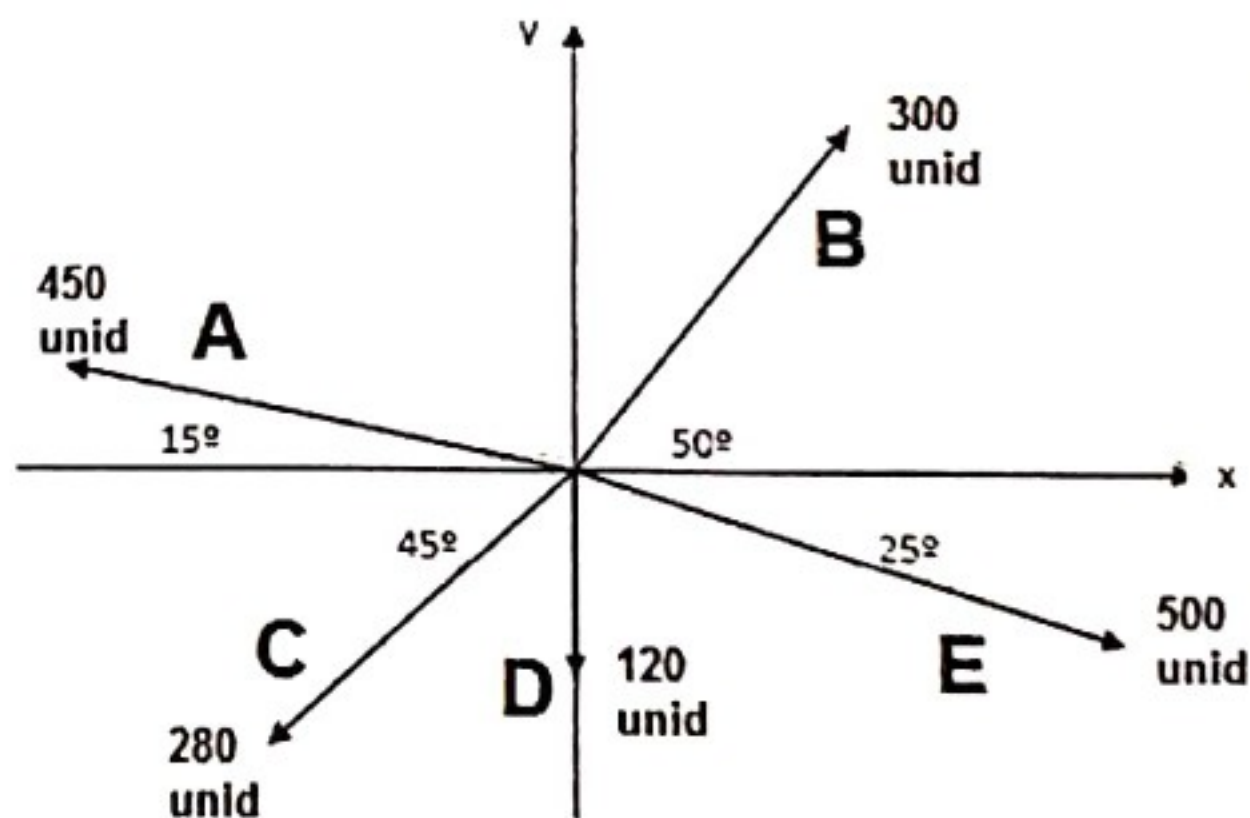
3. Para los vectores mostrados en la siguiente figura, determine:

a) El vector resultante (magnitud y dirección) de la suma de todos los vectores de la figura.

R// 184, -85.8°

b) El vector (magnitud y dirección), que sumado a la suma de los 5 vectores mostrados, da como resultado un vector nulo ($\langle 0,0 \rangle$).

R// 184, 94.2°



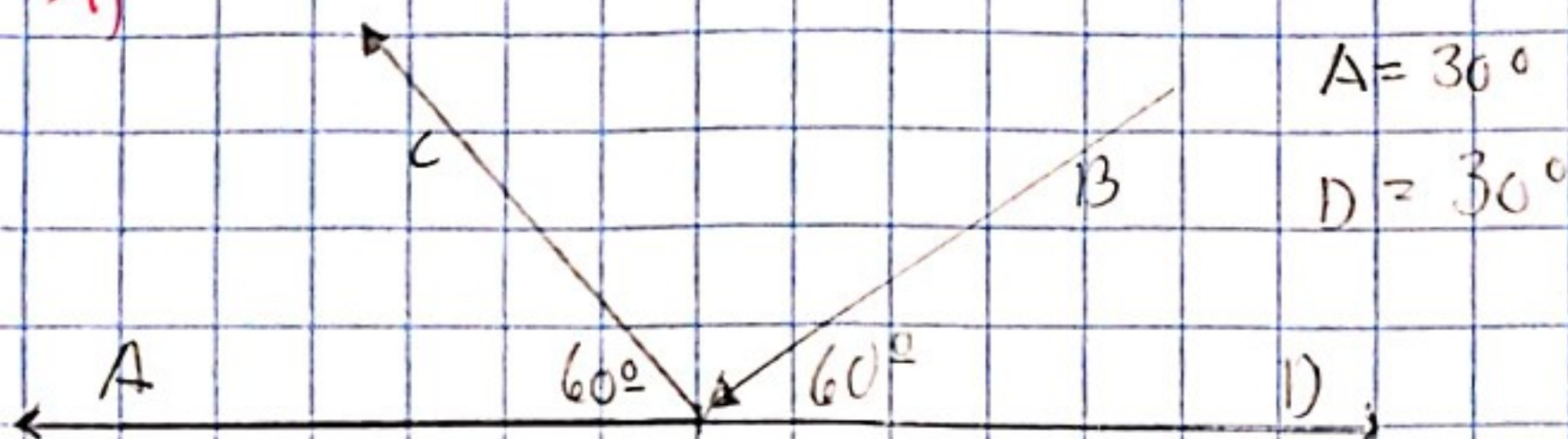
4. Dado los vectores $\mathbf{A} = 3.50\hat{i} + 5.60\hat{j} - 5.40\hat{k}$ y $\mathbf{C} = -3.40\hat{i} - 4.50\hat{j} - 3.40\hat{k}$.

a) El producto escalar entre los vectores A y C. **R// -18.7**

b) Determinar el ángulo entre los vectores A y C. **R// 110°**

c) El producto vectorial $\mathbf{A} \times \mathbf{C}$. **R// -43.3\hat{i} + 30.3\hat{j} + 3.39\hat{k}**

1)



$$A = 30^\circ$$

$$D = 30^\circ$$

$$A_x = 30 \cos 0^\circ$$

$$A_x = 30$$

$$A_y = 30 \sin$$

$$A_y = 0$$

$$B_x = 30 \cos 60$$

$$B_x = -15$$

$$B_y = 30 \sin 60$$

$$B_y = +25.98$$

$$C_x = 30 \cos 60^\circ$$

$$C_x = -15$$

$$C_y = 30 \sin 60^\circ$$

$$C_y = +25.98$$

$$G_x = 30 \quad G_y = 0$$

$$R = \sqrt{(30)^2 + (0)^2}$$

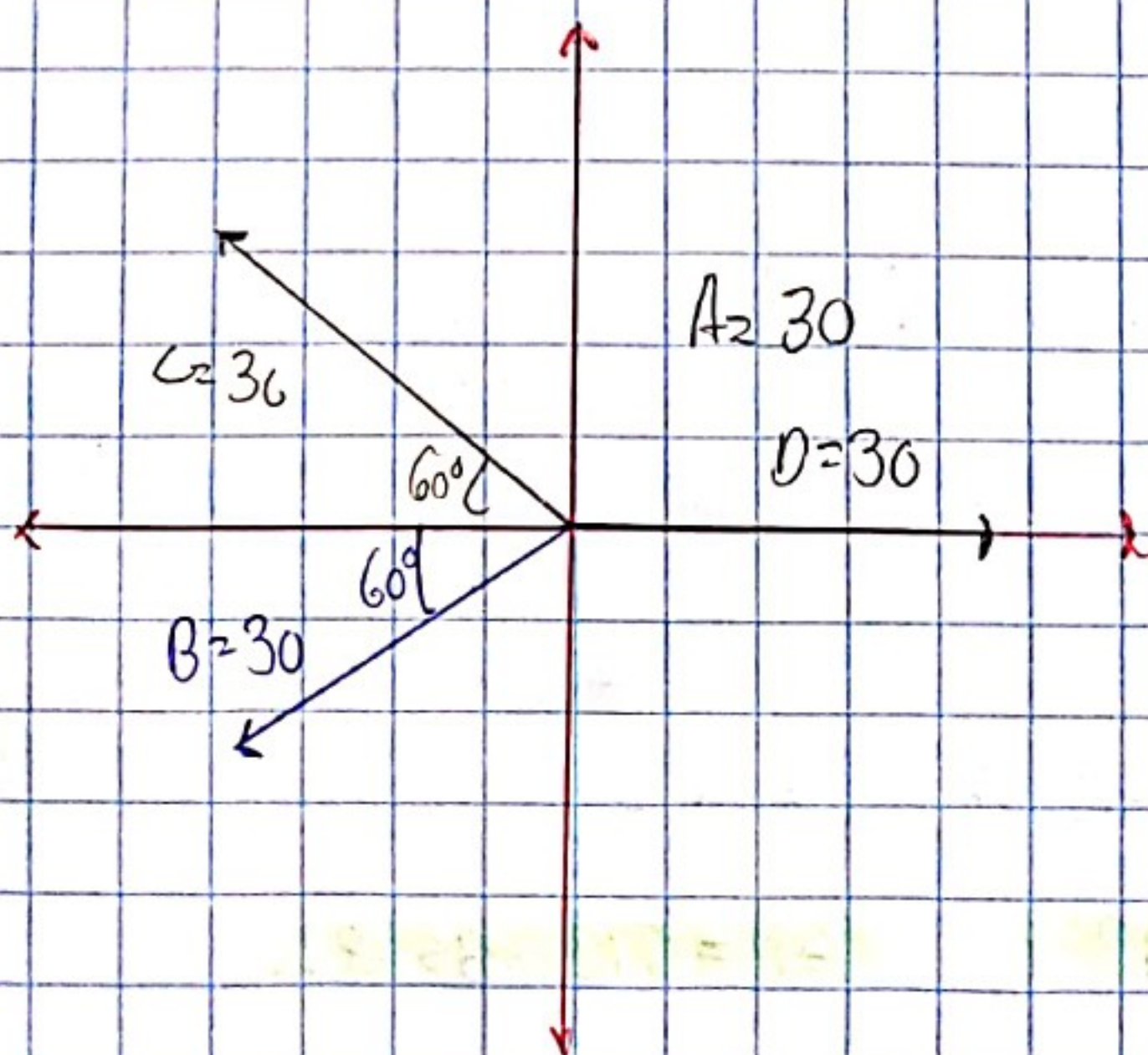
$$R = 30$$

$$\theta = \sin^{-1}\left(\frac{0}{30}\right)$$

$$\theta = 0$$

$$R = 30$$

$$\theta = 0^\circ \text{ este}$$



$$A = 30$$

$$D = 30$$

$$C = 30$$

$$B = 30$$

$$2) \begin{aligned} \vec{A} &= 72.4\text{m}, 58^\circ \\ \vec{B} &= 53.7\text{m}, 216^\circ \\ \vec{C} &= 77.8\text{m}, 27^\circ \end{aligned}$$

$$\cos \theta = A = A \cdot \cos \theta$$

$$\sin \theta = A_y = A \cdot \sin \theta$$

$$\vec{A} = (A \cos \theta, A \sin \theta)$$

$$A_x = (72.4\text{m}) \cos(58^\circ) = 38.37$$

$$A_y = (72.4\text{m}) \sin(58^\circ) = 61.40$$

$$B_x = 53.7\text{m} \cos(216^\circ) = -43.44$$

$$B_y = 53.7\text{m} \sin(216^\circ) = -31.66$$

$$= -5.07$$

$$= 12.04$$

$$C_x = 77.8\text{m} \cos(27^\circ) = 0$$

$$C_y = 77.8\text{m} \sin(27^\circ) = -17.8$$

$$|\vec{R}| = \sqrt{(-5.07)^2 + (12.04)^2}$$

$$|\vec{R}| = 13.06$$

$$\theta_p = \tan^{-1}\left(\frac{12.04}{-5.07}\right)$$

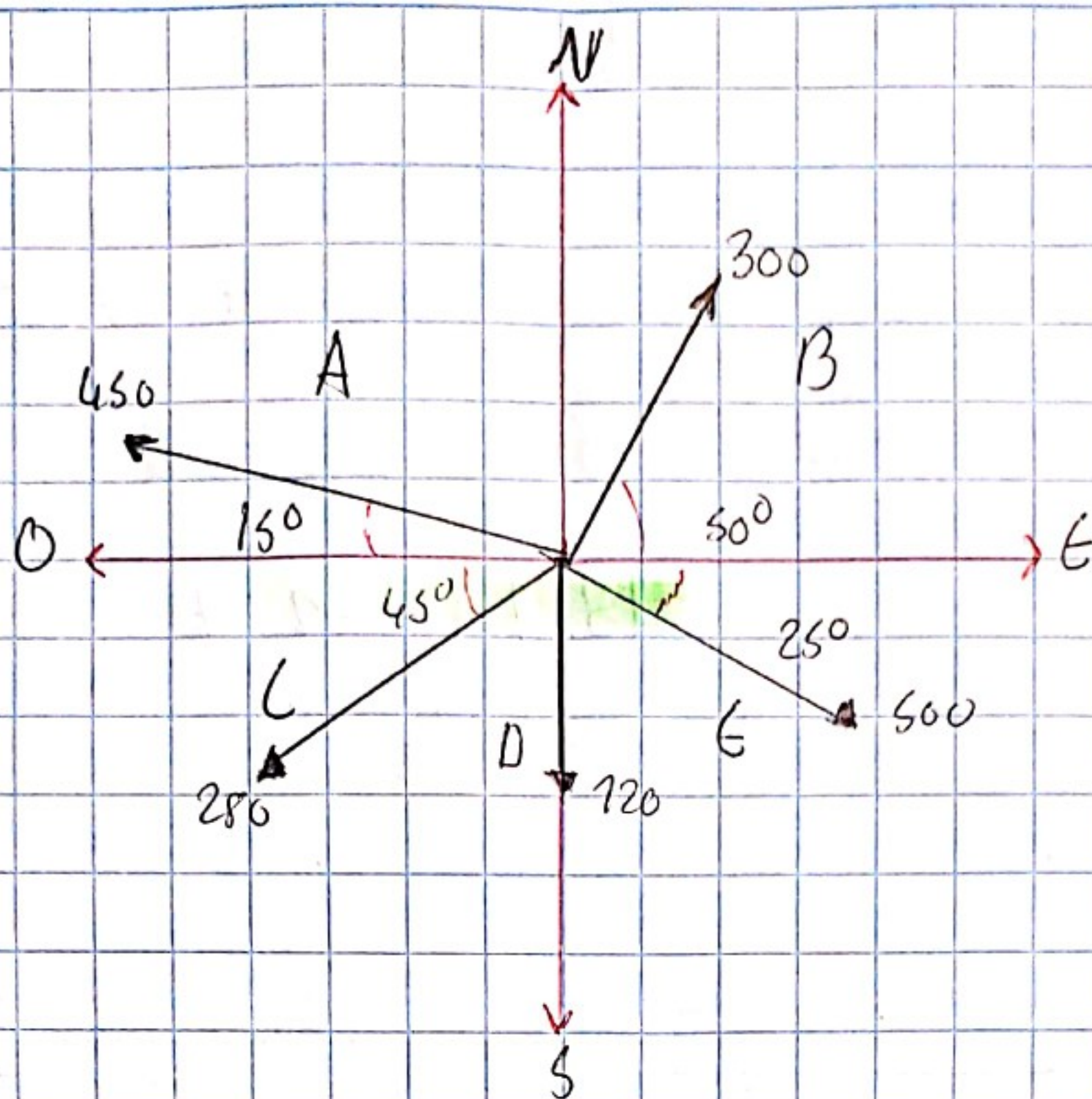
$$\theta_R = -67.1642784 + 180$$

$$\theta_R = 112.8357816$$

$$|\vec{R}| = 13.06$$

$$\theta_R = 112.8357816$$

3)



A)

$$A_x = 450 \cos 150^\circ$$

$$A_x = -43.63$$

$$B_x = 300 \cos 50^\circ$$

$$B_x = 192.84$$

$$C_x = 280 \cos 45^\circ$$

$$C_x = -192.99$$

$$A_y = 450 \sin 150^\circ$$

$$A_y = 176.43$$

$$B_y = 300 \sin 50^\circ$$

$$B_y = 224.81$$

$$C_y = 280 \sin 45^\circ$$

$$C_y = -192.99$$

$$D_x = 120 \cos 90^\circ$$

$$E_x = 500 \cos 25^\circ$$

$$E_x = 453.15$$

$$R = \sqrt{(13.33)^2 + (-183.02)^2}$$

$$D_y = 120 \sin 90^\circ$$

$$E_y = 500 \sin 25^\circ$$

$$E_y = -211.31$$

$$E_x = 13.33$$

$$E_y = -183.02$$

$$\theta = \tan^{-1}\left(\frac{-183.02}{13.33}\right)$$

$$D_y = -120$$

$$\theta = -85.8^\circ$$

$$b) -13.33 \quad -183.02$$

$$-13.33 + 183.02 = (0, 0)$$

b)

$$\theta = 185.3 + 180$$

$$\vec{r} = 184$$

$$\theta = 94.20$$

$$\angle 94.2^\circ$$

4) Dado

$$A = 3.50\hat{i} + 5.60\hat{j} - 5.40\hat{k} \quad C = -3.40\hat{i} - 4.50\hat{j} - 3.40\hat{k}$$

A) $(3.50)(-3.40) + (5.60)(-4.50) + (-5.40)(-3.40)$

$$-18.74 \approx -18.7$$

B) $\cos \theta = \frac{\vec{u} \cdot \vec{v}}{|\vec{u}| |\vec{v}|}$

$$\cos \theta = \frac{(3.50\hat{i} + 5.60\hat{j} - 5.40\hat{k}) \cdot (-3.40\hat{i} - 4.50\hat{j} - 3.40\hat{k})}{\sqrt{(3.50)^2 + (5.60)^2 + (-5.40)^2} \sqrt{(-3.40)^2 + (-4.50)^2 + (-3.40)^2}}$$

$$\cos \theta = \frac{-18.74}{56.77854824}$$

$$\cos \theta = -0.333578889$$

$$\theta = 109.4861501$$

$$\theta = 110^\circ$$

C) $A \times C$

$$\begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 3.50 & 5.60 & -5.40 \\ -3.40 & -4.50 & -3.40 \end{vmatrix}$$

$$A \times C = \hat{i}((5.60)(-3.40) - (-5.40)(-4.50)) - \hat{j}((3.50)(-3.40) - (-5.40)(-3.40)) + \hat{k}((3.50)(-4.50) - (5.60)(-3.40))$$

$$A \times C = -43.3\hat{i} + 30.3\hat{j} + 3.39\hat{k}$$