UDS

FISICA

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1: Sea un vector de 5cm con un angulo de 100 grados, calcula las respectivas componentes en los ejes x y y

$V_1 = 5\,cm \angle 100^\circ$

$V_{1x} = 5 \cos 100^\circ$

$V_{1x} = -0.86$

$V_{1y} = -5 \sin 100^\circ$

$V_{1y} = 4.92$

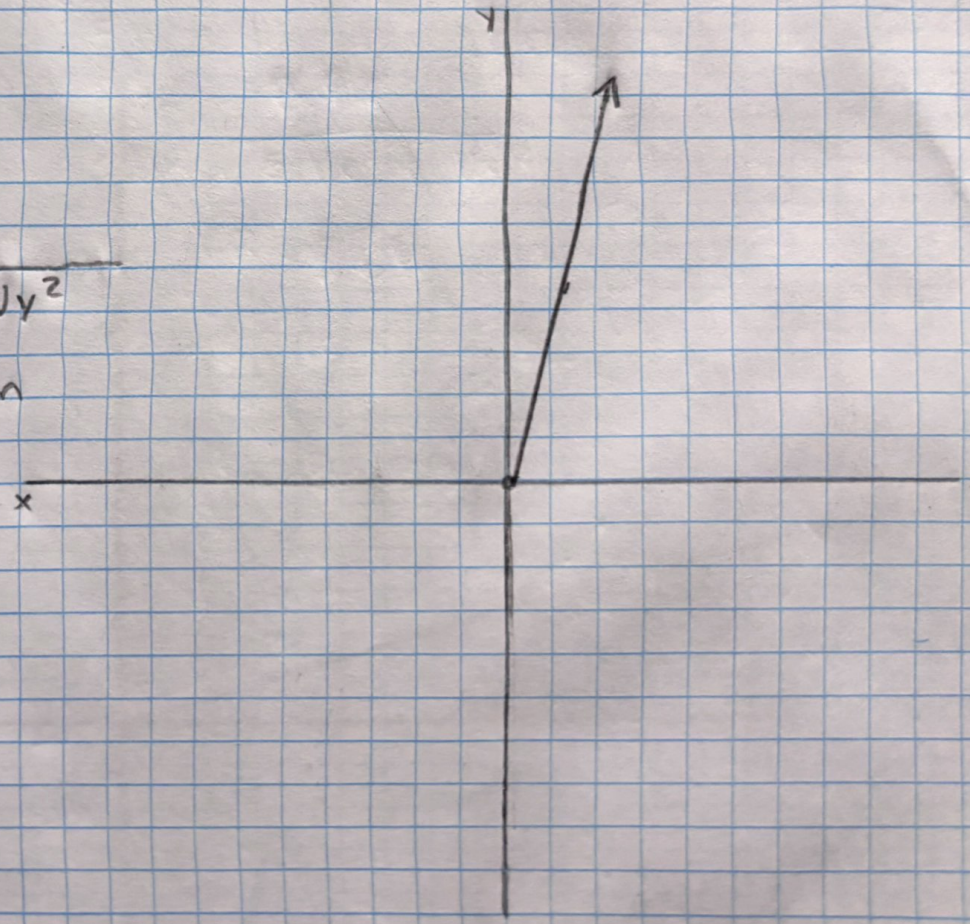
$VR = \sqrt{\Sigma Vx^2 + \Sigma Vy^2}$

$VR = 4.99\,cm$

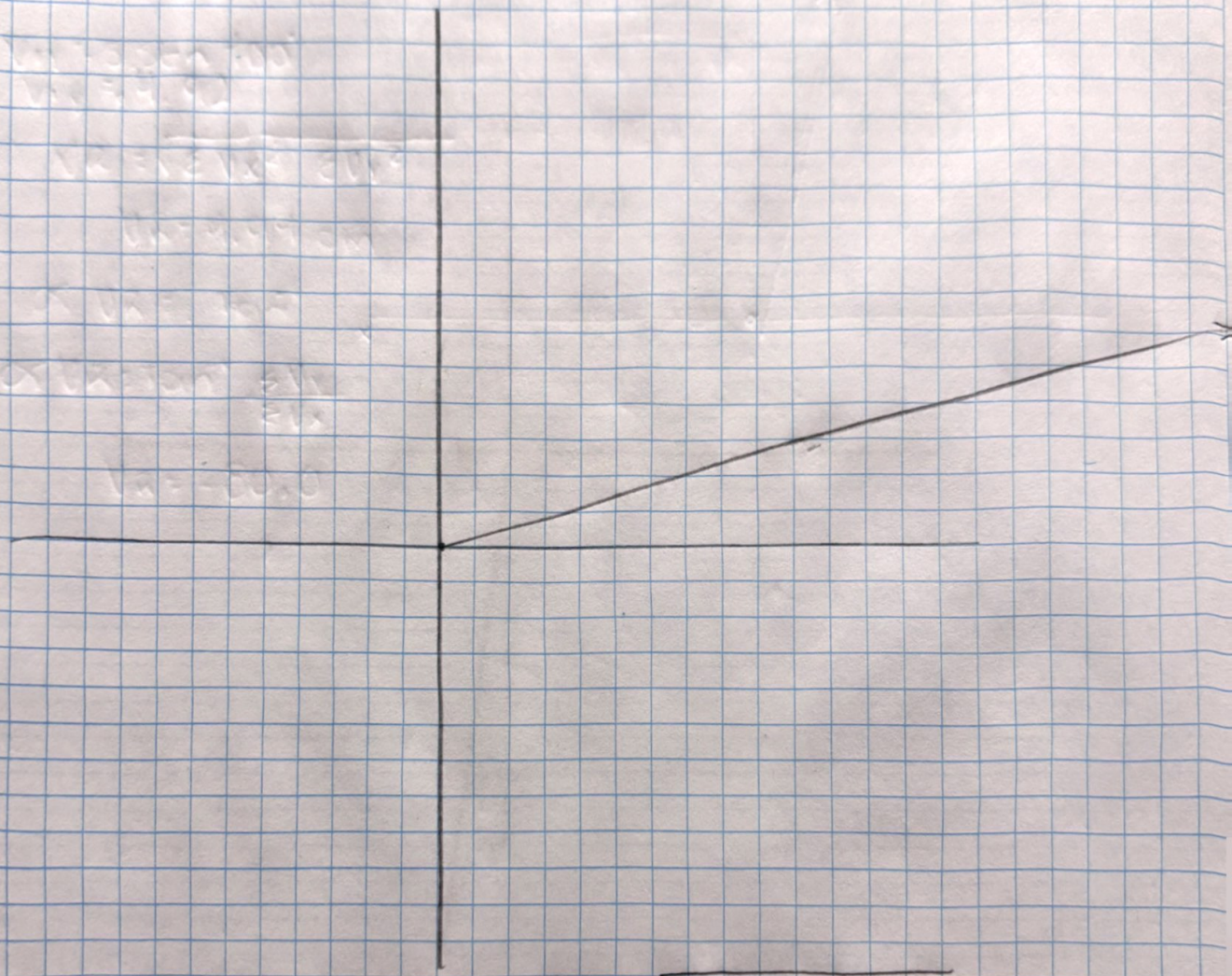
$\angle VR = \tan^{-1}$

$\angle VR = \text{Tan}^{-1} \frac{\Sigma Vy}{\Sigma Vx}$

$VR = -80.0$



2: Sea un vector de 20cm con un angulo de 150 grados, calcula las respectivas componentes en los ejes x y y



$V_{ix} = 20 \cos 150$

$V_{ix} = -17.32$

$V_{iy} = 20 \operatorname{sen} 150$

$V_{iy} = 10$

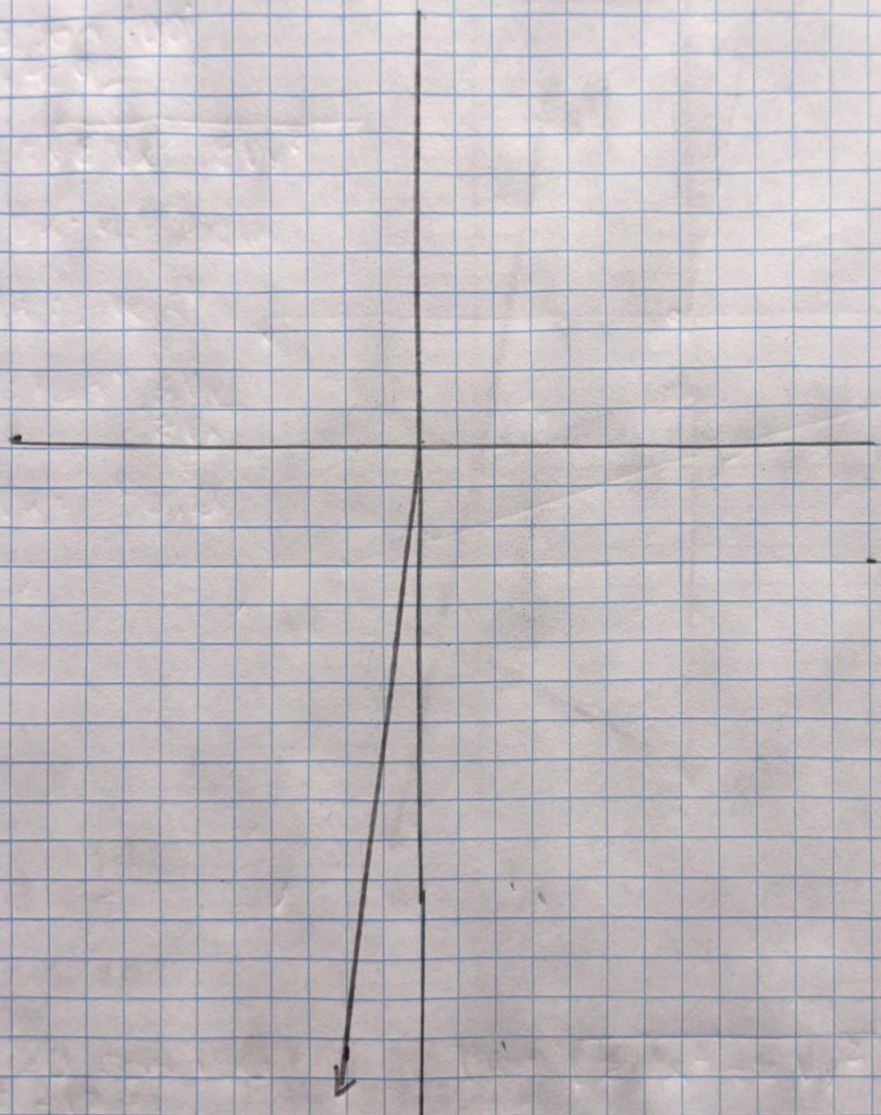
$VR = \sqrt{\Sigma Vx^2 + \Sigma Vy^2}$

$VR = 19.9$

$\alpha VR = \tan^{-1} \frac{\Sigma Vy}{\Sigma Vx}$

$VR = -30.0$

3.- Sea un vector de 25 cm con un angulo de 280 grados, calcula las respectivas componentes en los ejes X y Y



$V_{1x} = 25 \cos 280$

$V_{1x} = 4.34$

$V_{1y} = 25 \operatorname{sen} 280$

$V_{1y} = -24.62$

$V_R \sqrt{\Sigma V_x^2 + \Sigma V_y^2}$

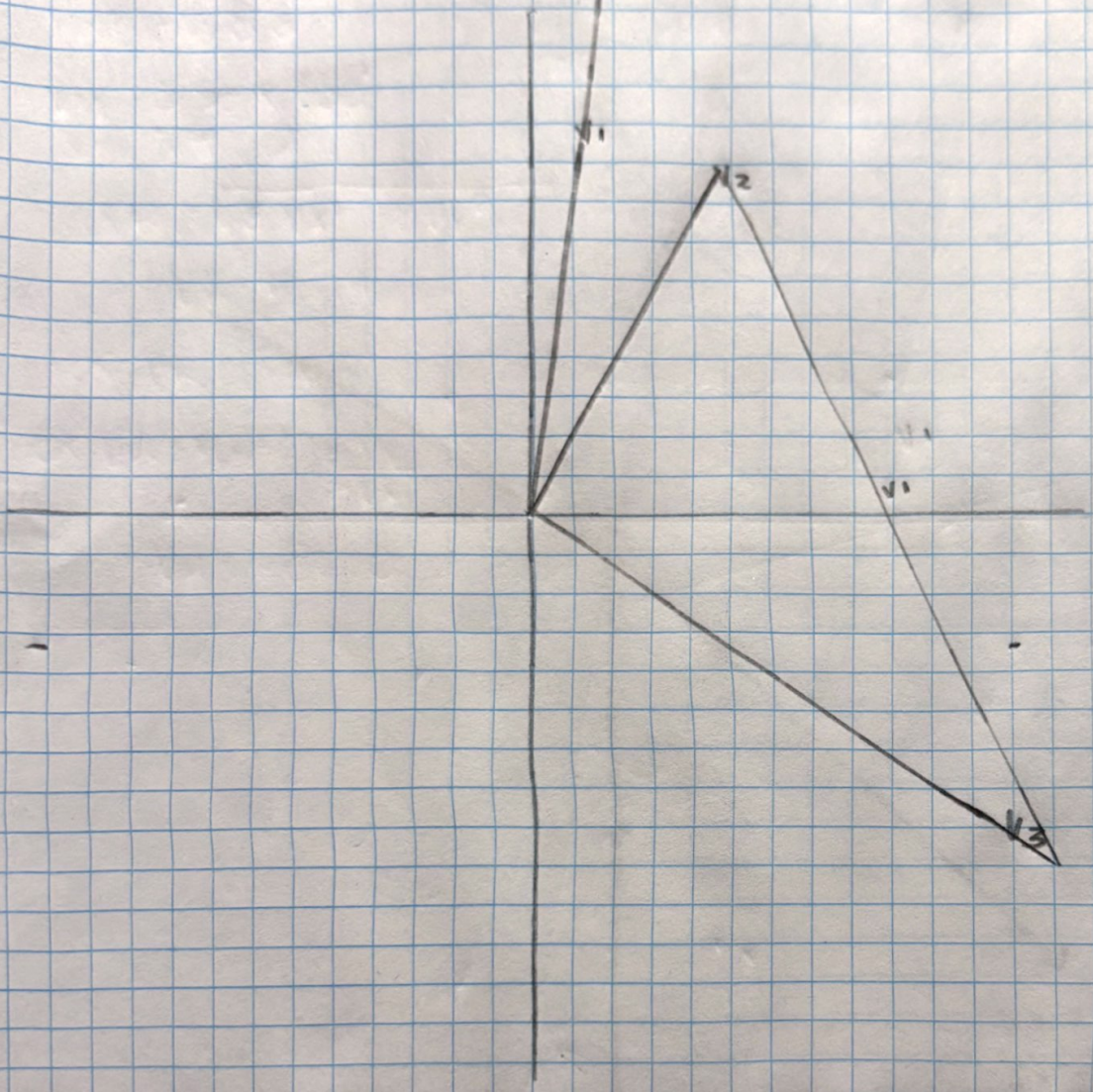
$V_R\ 25.01$

$\alpha V_R = \tan^{-1} \frac{\Sigma V_y}{\Sigma V_x}$

$V_R = -80.0$

4: Calcular el Vector resultante y el Angulo del Vector resultante de un sistema de vectores en los que $V_1 = 10cm \propto 85°$ $V_2 = 5cm \propto 110°$ $V_3 = 8cm \propto 200°$

V_1 $10cm \propto 85°$ $V_2 = 5cm \propto 110°$ $V_3 = 8cm \propto 200°$



$V_{1x} = 10 \cos 85$
V_{1x} 0.87

$V_{1y} = 10 \text{ sen } 85$
V_{1y} 9.96

$V_{2x} = 5 \cos 110$
$V_{2x} = -1.71$

$V_{2y} = 5 \text{ sen } 110$
V_{2y} 4.69

$V_{3x} = 8 \cos 200$
$V_{3x} = -7.51$

$V_{3y} = 8 \text{ sen } 200$
$V_{3y} = -2.73$

$\Sigma Ux = 0.87 + -1.71 + -7.51$
$\Sigma Ux = -8.35$

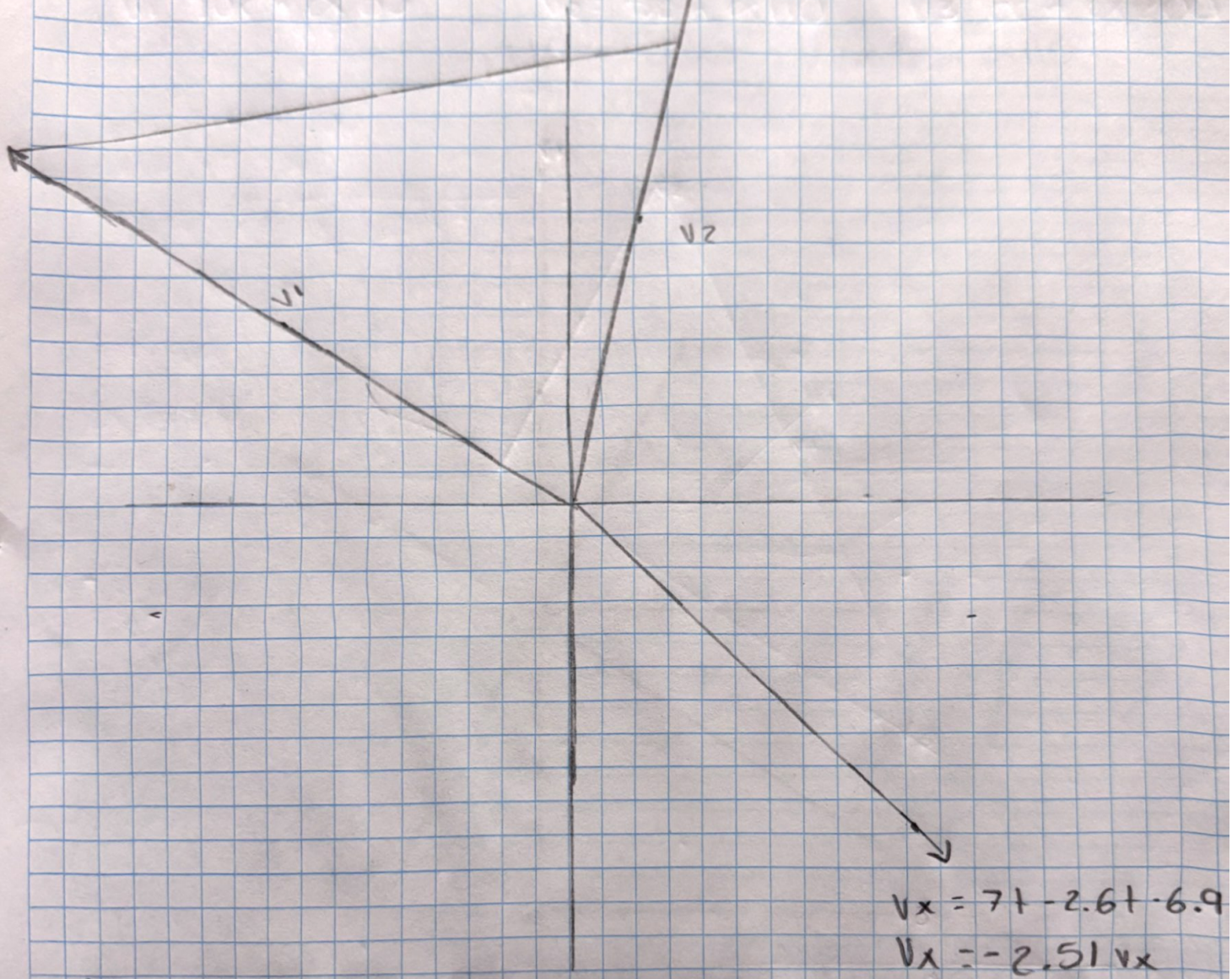
$\Sigma Uy = 9.96 + 4.69 + -2.73$
$\Sigma Uy = 11.92.$

$VR = \sqrt{\Sigma -8.35^2 + \Sigma 11.92^2}$
$VR = 14.55$

$\propto VR = \text{Tan} \frac{\Sigma 11.92}{\Sigma -8.35}$

$VR = 54.9$

5: Calcular el vector resultante y el angulo del vector resultante de un sistema de vectores en los que $V_1 = 10cm \propto 45°$ $V_2 = 15cm \propto 100°$ $V_3 = 8cm\ 210°$



$V_{1x} = 10 \cos 45$
$V_{1x} = 7$

$V_{1y} = 10 \text{ sen } 45$
$V_{1y} = 7$

$V_{2x} = 15 \cos 100$
$V_{2x} = -2.6$

$V_{2y} = 15 \text{ sen } 100$
$V_{2y} = 14.7$

$V_{3x} = 8 \cos 210$
$V_{3x} = -6.9$

$V_{3y} = 8 \text{ sen } 210$
$V_{3y} = -4$

$V_x = 7 + -2.6 + -6.9$
$V_x = -2.51\ V_x$

$V_y = 7 + 14.7 + -4$
$V_y = 17.7$

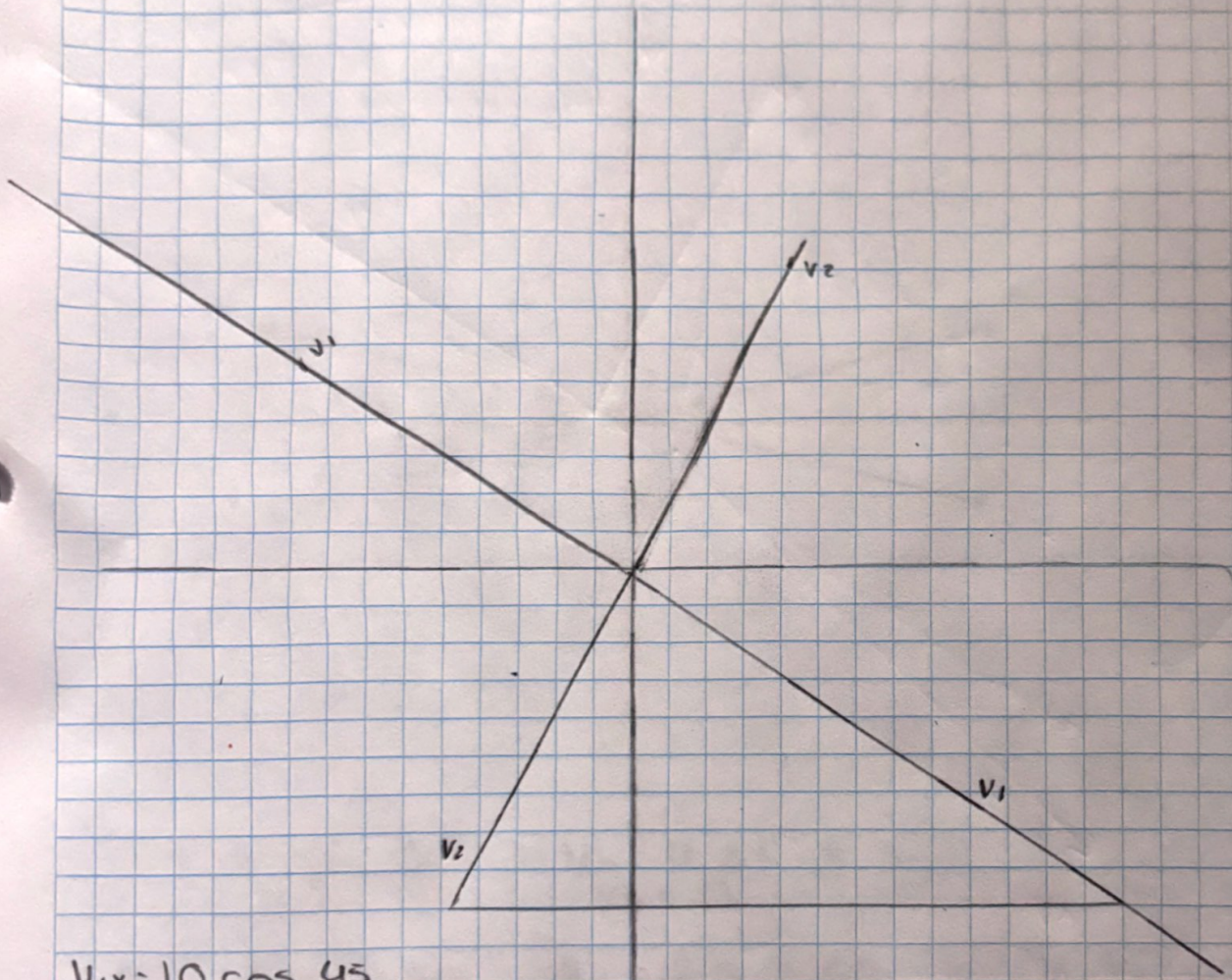
$VR = \sqrt{\Sigma 17.7^2 + \Sigma -2.51^2}$
$VR = 17.87$

$\propto VR = \text{Tan}^{-1} \frac{\Sigma 17.7}{\Sigma -2.51}$

$VR - 81.9$

6. Calcula el Vector resultante y el angulo del Vector Resultante cuando $V_R = V_1 - V_2$ de un sistema de vectores en los que $V_1 = 10cm\ 45°$; $V_2 = 5cm\ 110°$

$V_R = V_1 - V_2 \quad V_1 = 10cm \propto 45° \quad V_2 = 5cm \propto 110°$



$V_{1x} = 10 \cos 45$
$V_{1x} = 7.0$

$V_{1y} = 10 \text{ sen } 45$
$V_{1y} = 7.0$

$V_{2x} = 5 \cos 110$
$V_{2x} = -1.7$

$V_{2y} = 5 \text{ Sen } 110$
$V_{2y} = 4.6$

$V_x = 7.0 + -1.7$
$V_x = 5.3$

$V_y = 7.0 + 4.6$
$V_y = 11.6$

$\sqrt{R} = \sqrt{\varepsilon 5.3^2 + 11.6^2}$

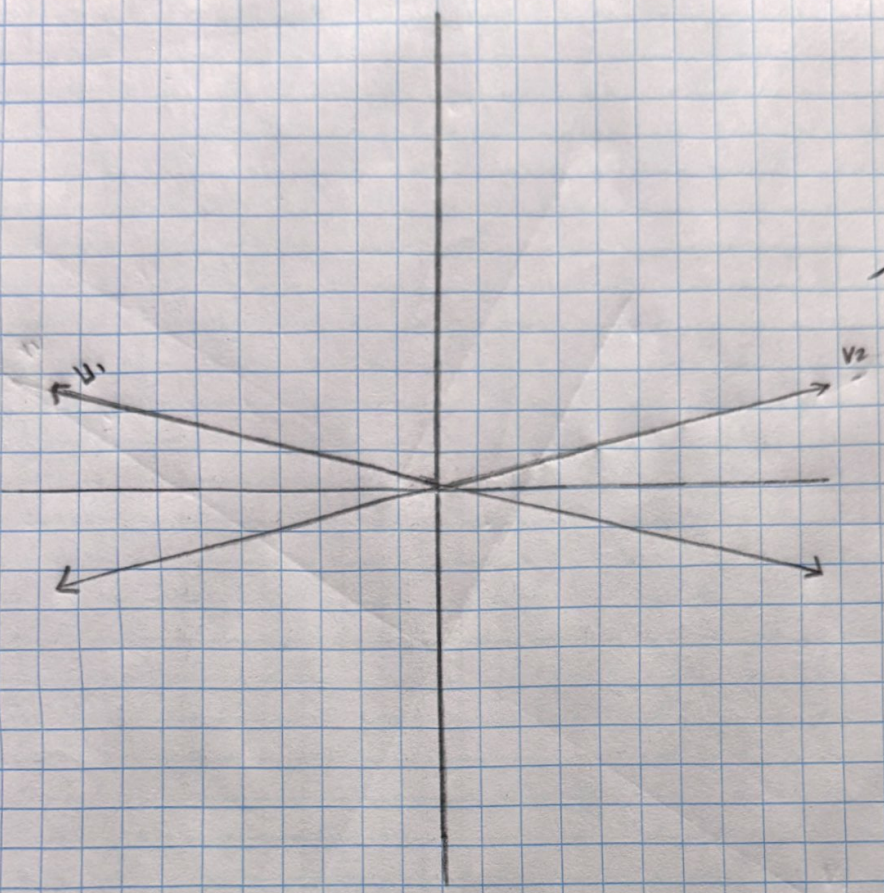
$V_R = 12.7$

$\propto V_R = \tan^{-1} \frac{\varepsilon 11.6}{\varepsilon 5.3}$

$V_R = 16.0$

7.- Calcular el vector resultante y el angulo del vector resultante cuando $V_R = V_2 - V_1$ de un sistema de vectores en los que $V_1 = 5cm \propto 30°$ $V_2 = 5cm \propto 150°$

$V_R = V_2 - V_1$ $V_1 = 5 \propto 30°$ $V_2 = 5 \propto 150°$



$V_{1x} = 5 \cos 30$
$V_{1x} = 4.3$

$V_{1y} = 5 \text{ sen } 30$
$V_{1y} = 2.5$

$V_{2x} = 5 \cos 150$
$V_{2x} = -4.3$

$V_{2y} = 5 \text{ sen } 150$
$V_{2y} = 2.5$

$V_x = 4.3 + -4.3$
$V_x = 0$

$V_y = 2.5 + 2.5$
$V_x = 5$

$V_R \sqrt{\pm 0^2 + 5^2}$

$V_R = 5$

$V_R = \tan^{-1} \frac{\pm 5}{\pm 0}$ = 0

$V_R = 0$