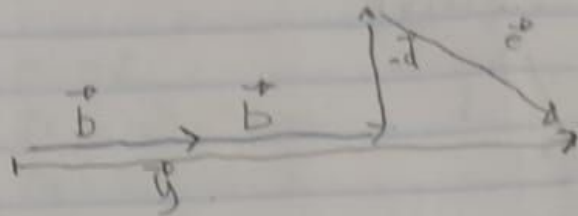
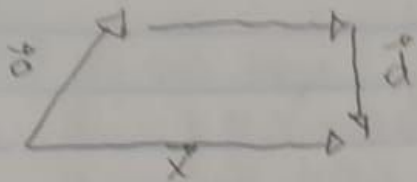


Lista 3 - Gulliver D. Hall

① a) $\vec{x} = \vec{a} + \vec{b} + \vec{d}$

b) $\vec{y} = 2\vec{b} - \vec{d} + \vec{c}$



② a) V

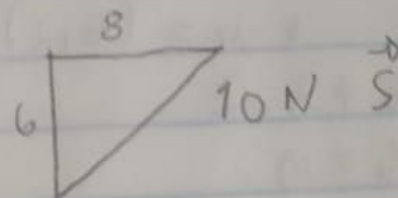
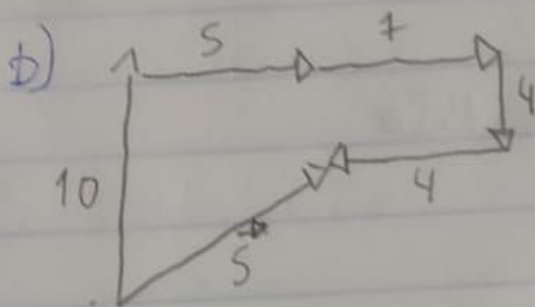
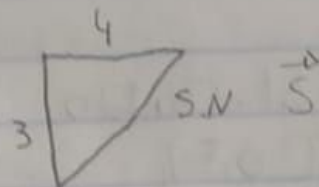
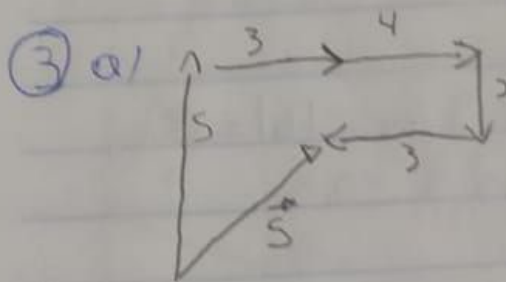
d) F

b) V

e) F

c) V

f) V



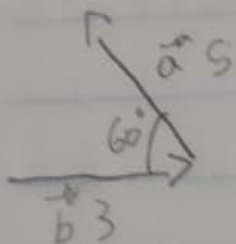
④ $(\vec{b} + \vec{a})$

$$|\vec{b} + \vec{a}|^2 = |\vec{b}|^2 + |\vec{a}|^2 - 2 \cdot |\vec{b}| \cdot |\vec{a}| \cdot \cos(\theta)$$

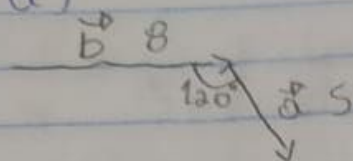
$$|\vec{b} + \vec{a}|^2 = 16 + 25 - 2 \cdot 4 \cdot 5 \cdot 0,5$$

$$|\vec{b} + \vec{a}|^2 = 64 + 25 - 2 \cdot 8 \cdot 5 \cdot 0,5$$

$$|\vec{b} + \vec{a}| = \sqrt{49} = 7$$



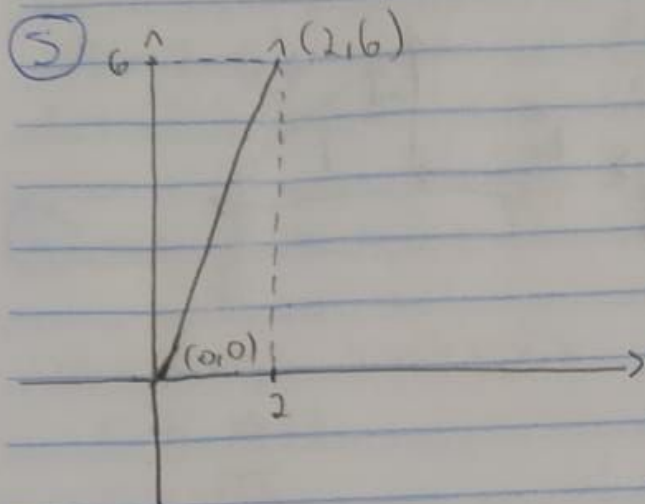
$$(\vec{b} - \vec{a})$$



$$|\vec{b} + \vec{a}|^2 = |\vec{b}|^2 + |\vec{a}|^2 - 2 \cdot |\vec{b}| \cdot |\vec{a}| \cdot \cos(120^\circ)$$

$$|\vec{b} + \vec{a}|^2 = 64 + 25 - 2 \cdot 8 \cdot 5 \cdot (-0,5)$$

$$|\vec{b} + \vec{a}| = \sqrt{129} \approx 11,36$$



6 a.b

$$\begin{aligned} a.b &= |\vec{a}| \cdot |\vec{b}| \cdot \cos 120^\circ \\ &= 5 \cdot 8 \cdot (-0,5) \\ &= -20 \end{aligned}$$

$$|\vec{a}| = 5 \text{ m} \quad |\vec{b}| = 8 \text{ m}$$

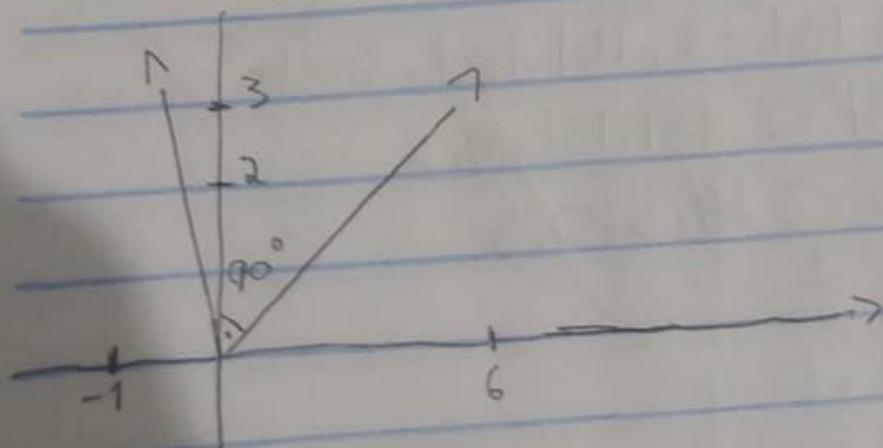
$$\cos 120^\circ = -0,5$$

7 $\vec{v} = (-1, 3)$ and $\vec{w} = (6, 2)$

$$\vec{v} \cdot \vec{w} = (-1) \cdot 6 + 3 \cdot 2$$

$$\vec{v} \cdot \vec{w} = -6 + 6 = 0$$

} Angulo Recto



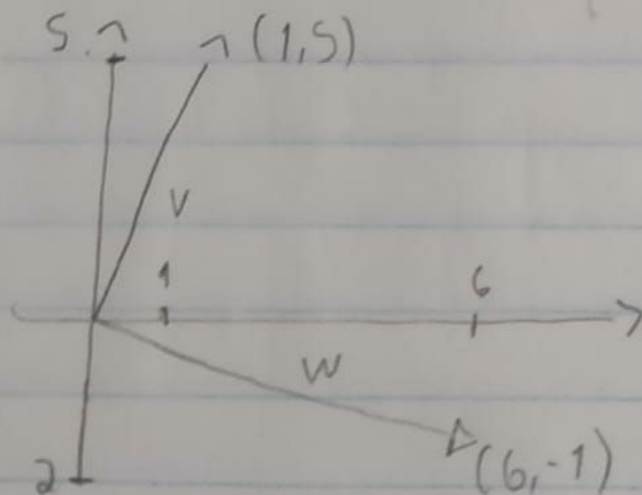
③ a) $|\vec{V}_0|$ 36 m/s
 $V_{0x} = 36 \cdot \cos 60^\circ$
 $V_{0x} = 36 \cdot 0,5$
 $V_{0x} = 18$

$\theta = 60^\circ$
 $V_{0y} = 36 \cdot \sin 60^\circ$
 $V_{0y} = 36 \cdot 0,866$
 $V_{0y} = 31,176$

b) $|\vec{P}|$ 3,4 kg
 $P_m = 3,4 \cdot \cos 30^\circ$
 $P_m = 3,4 \cdot 0,866$
 $P_m \approx 2,944$

$\theta = 30^\circ$
 $P_t = 3,4 \cdot \sin 30^\circ$
 $P_t = 3,4 \cdot 0,5$
 $P_t = 1,7$

④ $V = (1, 5)$ $W = (6, -1)$



$V \cdot W = 1 \cdot 6 + 5 \cdot (-1) = 1$

$\|W\|^2 = 6^2 + (-1)^2 = 37$

$\text{Proj}_W V = \left(\frac{1}{37} \right) W = \frac{1}{37} \cdot (6, -1)$

$\text{Proj}_W V = \left(\frac{6}{37}, -\frac{1}{37} \right)$