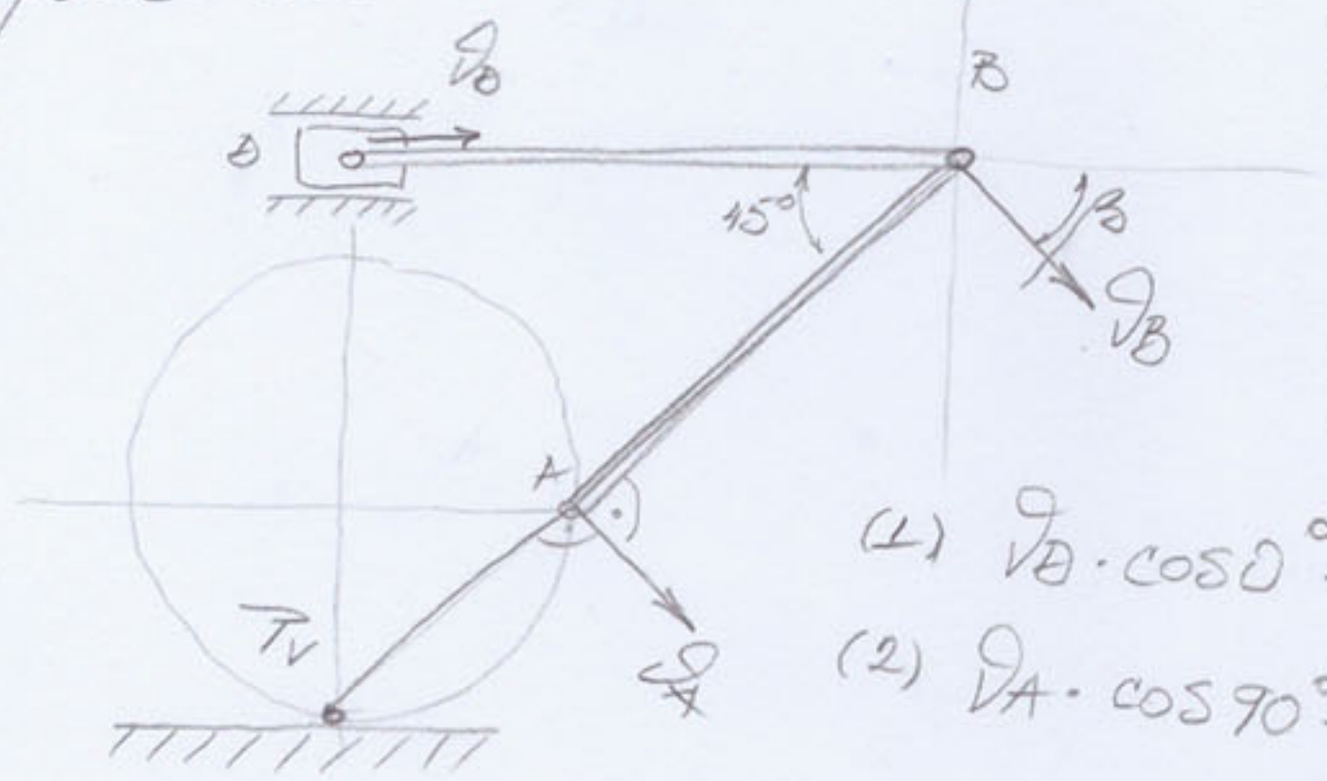
(2) Други начин за определяване ъгъла β

Група 1

$\vartheta_A = 4\sqrt{2}$ m/s

$\vartheta_D = 3$ m/s



(1) $\vartheta_B \cdot \cos 0° = \vartheta_B \cdot \cos\beta$

(2) $\vartheta_A \cdot \cos 90° = \vartheta_B \cdot \cos(180° - 45° - \beta)$

(2) $\Rightarrow$ $\vartheta_A \cdot 0 = \vartheta_B \cdot \cos(180° - 45° - \beta)$

$\vartheta_B = 0$ $\vee$ $\cos(180° - 45° - \beta) = 0$

$\vartheta_B = 0$ не може да бъде, защото не удовлетворява уравнение (1), не би била задоволена

$180° - 45° - \beta = 90° \vee 270°$

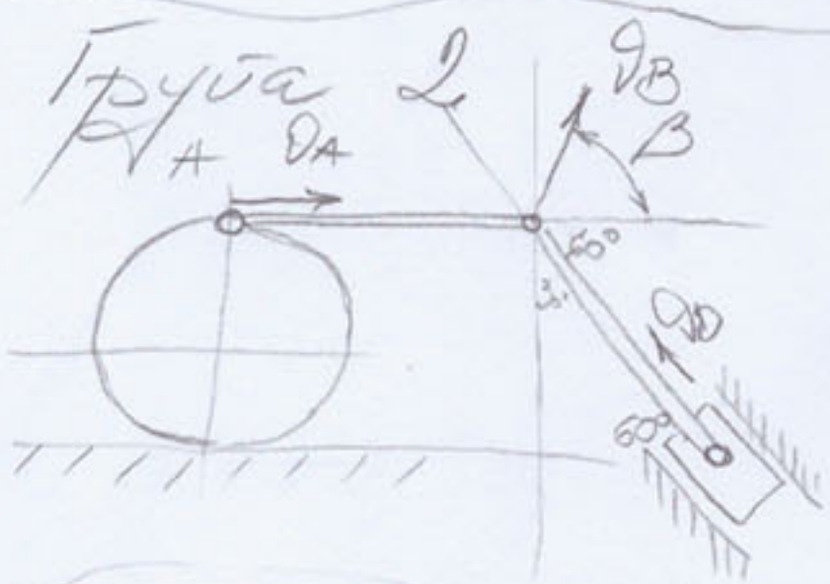
$\beta = 180° - 45° - 90° = 45°$ удовлетворява уравнение (1), не би била задоволена

$\beta = 45°$ не може да бъде

(1) $\Rightarrow$ $\vartheta_B = \frac{\vartheta_D \cos 0°}{\cos 45°} = \frac{3 \cdot 1}{\frac{1}{\sqrt{2}}} = 3\sqrt{2}$ m/s

Група 2

$\vartheta_A = 8$ m/s $\quad \vartheta_D = 3$ m/s



(1) $\vartheta_A \cdot \cos 0° = \vartheta_B \cos\beta$

(2) $\vartheta_D \cdot \cos 0° = \vartheta_B \cdot \cos(\underbrace{180° - 60°}_{120°} - \beta)$

$\cos(120° - \beta) = \cos 120° \cos\beta + \sin 120° \sin\beta$

$= -\frac{1}{2}\cos\beta + \frac{\sqrt{3}}{2}\sin\beta$

(1) и (2) $\Rightarrow$ $\begin{cases} \vartheta_B = \frac{\vartheta_A \cdot 1}{\cos\beta} \\ \vartheta_D \cdot 1 = \frac{\vartheta_A}{\cos\beta}\left(\frac{1}{2}(\sqrt{3}\sin\beta - \cos\beta)\right) \end{cases}$

$\vartheta_D = \frac{\vartheta_A}{2}(\sqrt{3}\,tg\beta - 1) \Rightarrow tg\beta = \frac{\frac{2\vartheta_D}{\vartheta_A} + 1}{\sqrt{3}} = \frac{\frac{2 \cdot 3}{8} + 1}{\sqrt{3}} \Rightarrow \beta = 45{,}3°$

$\vartheta_B = \frac{8}{\cos 45{,}3°} = 11{,}37$ m/s