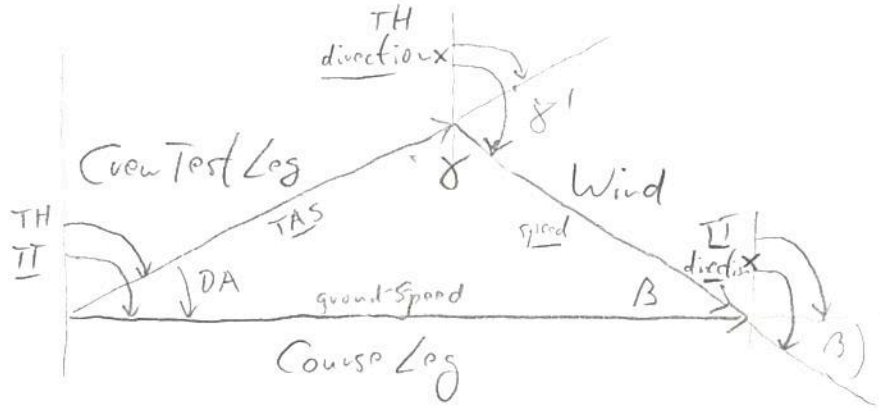
Winddreieck (1)



Course Leg	true Track (TT) distance	ground Speed (GS)
Wind	direction = direction − 180° speed	
Crew Test Leg	TAS	true Heading (TH)

$DA = TT - TH$

$\gamma = 180° - (direction - TH)$

$DA + \beta + \gamma = 180°$

$\frac{speed}{\sin DA} = \frac{TAS}{\sin \beta} = \frac{GS}{\sin \gamma}$

$\gamma = 180° - direction + TH$

$\gamma = 180° - \beta - DA$

$TH = TT - DA$

$\gamma = 180° - direction + TT - DA$

$DA = 180° + TT - direction - \gamma$

$DA = 180° + TT - direction - 180° + \beta + DA$

1. $\beta = direction - TT$

Windvieck (2)

$$\frac{\text{Speed}}{\text{TAS}} = \frac{\sin DA}{\sin \beta}$$

$$\sin DA = \frac{\text{Speed}}{\text{TAS}} \sin \beta$$

2. $DA = \arcsin\left(\frac{\text{Speed}}{\text{TAS}} \sin \beta\right)$

3. $TH = TT - DA$

4. $\gamma = 180° - \text{direction} + TH$

5. $GS = \text{TAS} \cdot \frac{\sin \gamma}{\sin \beta}$

Bsp: direction $= 330° - 180° = 150°$
speed $= 15\,kt$
TT $= 108°$
TAS $= 110\,kt$

1. $\beta = 150° - 108° = 42°$
2. $DA = \arcsin\left(\frac{15\,kt}{110\,kt} \sin(42°)\right) = 5{,}23°$
3. $TH = 108° - 5{,}23° = 102{,}76°$
4. $\gamma = 180° - 150° + 102{,}76° = 132{,}76°$
5. $GS = 110\,kt \frac{\sin 132{,}76°}{\sin 42°} = 120{,}7\,kt$

$150°$ $\quad \sin 330° = -0{,}5$
$\sin -30°$