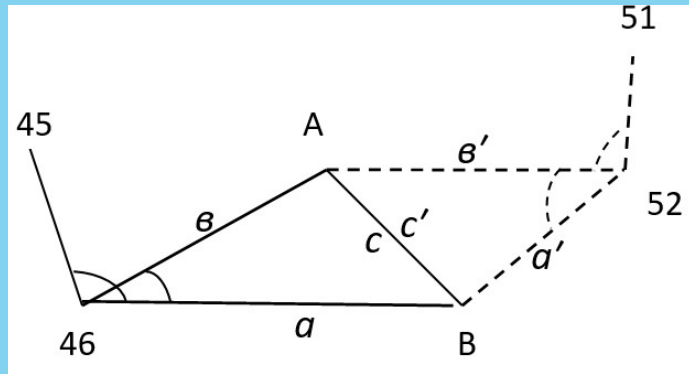


Вычисление дирекционных углов



$$\alpha_{46-45} = 65^{\circ}17'43''; \quad X_{46} = 128,450 \text{ м}; \quad Y_{46} = 298,340 \text{ м}.$$

$$\beta_{45-46-B} = 111^{\circ}10'15''$$

$$\gamma = 0^{\circ}25'10''$$

$$a = 9,345 \text{ м}$$

$$b = 6,056 \text{ м}$$

$$c = 3,290 \text{ м}$$

$$\beta_{A-52-51} = 176^{\circ}52'10''$$

$$\gamma' = 1^{\circ}10'30''$$

$$a' = 3,388 \text{ м}$$

$$b' = 6,675 \text{ м}$$

$$c' = 3,289 \text{ м}$$

По отвесу А

$$\alpha_{46-A} = \alpha_{46-45} + \beta_{45-46-B} - \gamma$$

$$\alpha_{A-52} = \alpha_{46-A} - (A + A') \pm 180^{\circ}$$

$$\alpha_{52-51} = \alpha_{A-52} + \beta'_{A-52-51} \pm 180^{\circ}$$

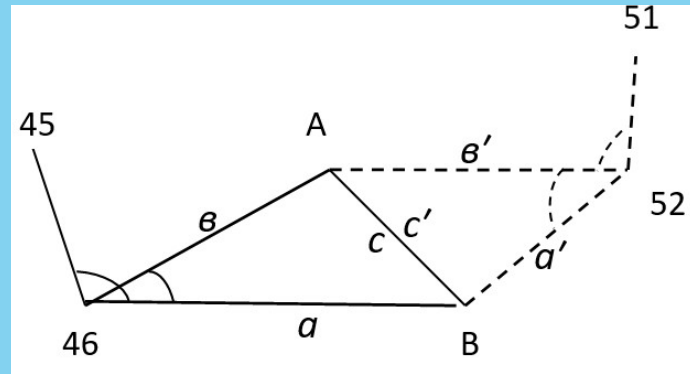
По отвесу В

$$\alpha_{46-B} = \alpha_{46-45} + \beta_{45-46-B}$$

$$\alpha_{B-52} = \alpha_{46-B} + (B + B') \pm 180^{\circ}$$

$$\alpha_{52-51} = \alpha_{B-52} + (\beta'_{A-52-51} + \gamma') \pm 180^{\circ}$$

Вычисление дирекционных углов



$$\alpha_{45-46} = 245^{\circ}17'43''; \quad X_{46} = 128,450 \text{ м}; \quad Y_{46} = 298,340 \text{ м}.$$

$$\beta_{45-46-B} = 111^{\circ}10'15''$$

$$\gamma = 0^{\circ}25'10''$$

$$a = 9,345 \text{ м}$$

$$b = 6,056 \text{ м}$$

$$c = 3,290 \text{ м}$$

$$\beta_{A-52-51} = 176^{\circ}52'10''$$

$$\gamma' = 1^{\circ}10'30''$$

$$a' = 3,388 \text{ м}$$

$$b' = 6,675 \text{ м}$$

$$c' = 3,289 \text{ м}$$

По отвесу А

$$\alpha_{46-A} = \alpha_{45-46} + \beta_{45-46-B} - \gamma \pm 180^{\circ}$$

$$\alpha_{A-52} = \alpha_{46-A} - (A + A') \pm 180^{\circ}$$

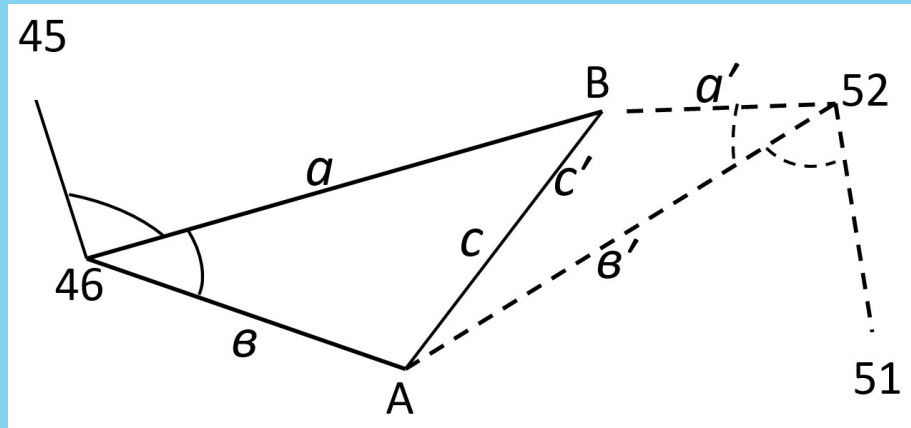
$$\alpha_{52-51} = \alpha_{A-52} + \beta'_{A-52-51} \pm 180^{\circ}$$

По отвесу В

$$\alpha_{46-B} = \alpha_{45-46} + \beta_{45-46-B} \pm 180^{\circ}$$

$$\alpha_{B-52} = \alpha_{46-B} + (B + B') \pm 180^{\circ}$$

$$\alpha_{52-51} = \alpha_{B-52} + (\beta'_{A-52-51} + \gamma') \pm 180^{\circ}$$



$$\alpha_{46-45} = 315^{\circ}46'18''; \quad X_C = 26416,843 \text{ м}; \quad Y_C = 17814,615 \text{ м}.$$

$\beta_{ACB} = 179^{\circ}35'15''$	$\beta_{AC'A'} = 50^{\circ}10'20''$
$\gamma = 0^{\circ}01'30''$	$\gamma' = 1^{\circ}10'40''$
$a = 7,245 \text{ м}$	$a' = 5,675 \text{ м}$
$b = 4,389 \text{ м}$	$b' = 8,533 \text{ м}$
$c = 2,857 \text{ м}$	$c' = 2,859 \text{ м}$

По отвесу А

$$\alpha_{46-A} = \alpha_{46-45} + \beta_{45-46-B} + \gamma$$

$$\alpha_{A-52} = \alpha_{46-A} + (A + A') \pm 180^{\circ}$$

$$\alpha_{52-51} = \alpha_{A-52} - \beta'_{A-52-51} \pm 180^{\circ}$$

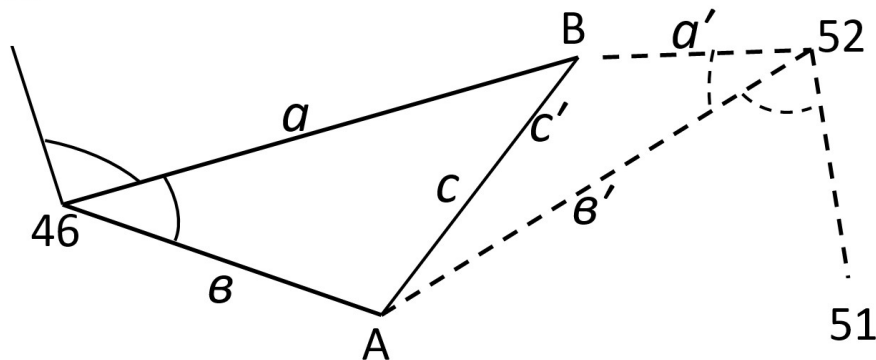
По отвесу В

$$\alpha_{46-B} = \alpha_{46-45} + \beta_{45-46-B}$$

$$\alpha_{B-52} = \alpha_{46-B} - (B + B') \pm 180^{\circ}$$

$$\alpha_{52-51} = \alpha_{B-52} - (\beta'_{A-52-51} + \gamma') \pm 180^{\circ}$$

45



$$\alpha_{45-46} = 35^{\circ}46'18''; \quad X_C = 26416,843 \text{ м}; \quad Y_C = 17814,615 \text{ м}.$$

$$\beta_{ACB} = 179^{\circ}35'15''$$

$$\gamma = 0^{\circ}01'30''$$

$$a = 7,245 \text{ м}$$

$$b = 4,389 \text{ м}$$

$$c = 2,857 \text{ м}$$

$$\beta_{AC'A'} = 50^{\circ}10'20''$$

$$\gamma' = 1^{\circ}10'40''$$

$$a' = 5,675 \text{ м}$$

$$b' = 8,533 \text{ м}$$

$$c' = 2,859 \text{ м}$$

По отвесу А

$$\alpha_{46-A} = \alpha_{45-46} + \beta_{45-46-B} + \gamma \pm 180^{\circ}$$

$$\alpha_{A-52} = \alpha_{46-A} + (A + A') \pm 180^{\circ}$$

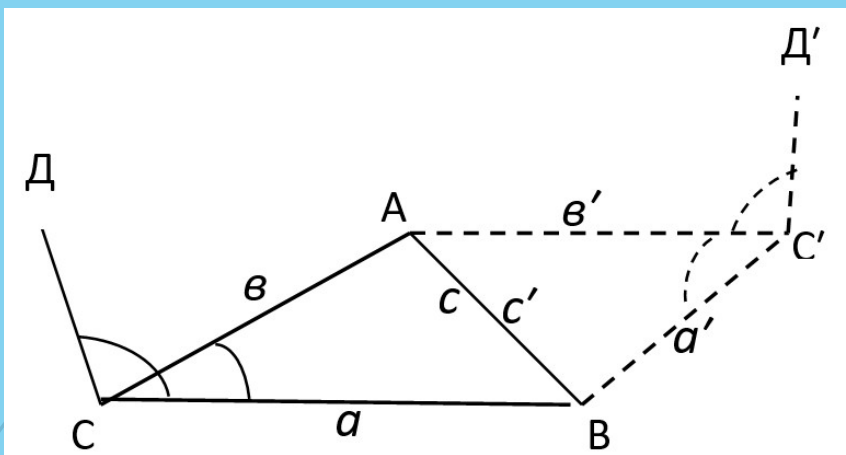
$$\alpha_{52-51} = \alpha_{A-52} - \beta'_{A-52-51} \pm 180^{\circ}$$

По отвесу В

$$\alpha_{46-B} = \alpha_{45-46} + \beta_{45-46-B} \pm 180^{\circ}$$

$$\alpha_{B-52} = \alpha_{46-B} - (B + B') \pm 180^{\circ}$$

$$\alpha_{52-51} = \alpha_{B-52} - (\beta'_{A-52-51} + \gamma') \pm 180^{\circ}$$



$$\alpha_{CD} = 176^{\circ}41'03''; \quad X_C = 2045,543 \text{ м}; \quad Y_C = 4176,416 \text{ м}.$$

$$\beta_{ACB} = 110^{\circ}10'12''$$

$$\gamma = 0^{\circ}30'10''$$

$$a = 8,325 \text{ м}$$

$$b = 4,983 \text{ м}$$

$$c = 3,340 \text{ м}$$

$$\beta_{AC'D'} = 167^{\circ}10'14''$$

$$\gamma' = 1^{\circ}02'25''$$

$$a' = 6,327 \text{ м}$$

$$b' = 9,664 \text{ м}$$

$$c' = 3,338 \text{ м}$$

По отвесу А

$$\alpha_{CA} = \alpha_{CD} + \beta_{DCB} - \gamma$$

$$\alpha_{A-C'} = \alpha_{CA} - (A + A') \pm 180^{\circ}$$

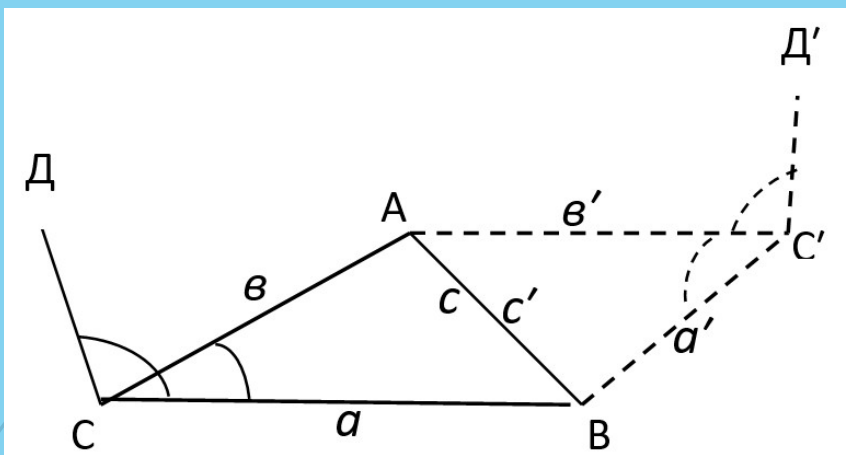
$$\alpha_{C'-D'} = \alpha_{A-C'} + \beta'_{AC'D'} \pm 180^{\circ}$$

По отвесу В

$$\alpha_{CB} = \alpha_{CD} + \beta_{DCB}$$

$$\alpha_{B-C'} = \alpha_{46-B} + (B + B') \pm 180^{\circ}$$

$$\alpha_{C'-D'} = \alpha_{B-C'} + (\beta'_{AC'D'} + \gamma') \pm 180^{\circ}$$



$$\alpha_{DC} = 356^{\circ}41'03''; \quad X_C = 2045,543 \text{ м}; \quad Y_C = 4176,416 \text{ м}.$$

$$\beta_{ACB} = 110^{\circ}10'12''$$

$$\gamma = 0^{\circ}30'10''$$

$$a = 8,325 \text{ м}$$

$$b = 4,983 \text{ м}$$

$$c = 3,340 \text{ м}$$

$$\beta_{AC'D'} = 167^{\circ}10'14''$$

$$\gamma' = 1^{\circ}02'25''$$

$$a' = 6,327 \text{ м}$$

$$b' = 9,664 \text{ м}$$

$$c' = 3,338 \text{ м}$$

По отвесу А

$$\alpha_{CA} = \alpha_{DC} + \beta_{DCB} - \gamma \pm 180^{\circ}$$

$$\alpha_{A-C'} = \alpha_{CA} - (A + A') \pm 180^{\circ}$$

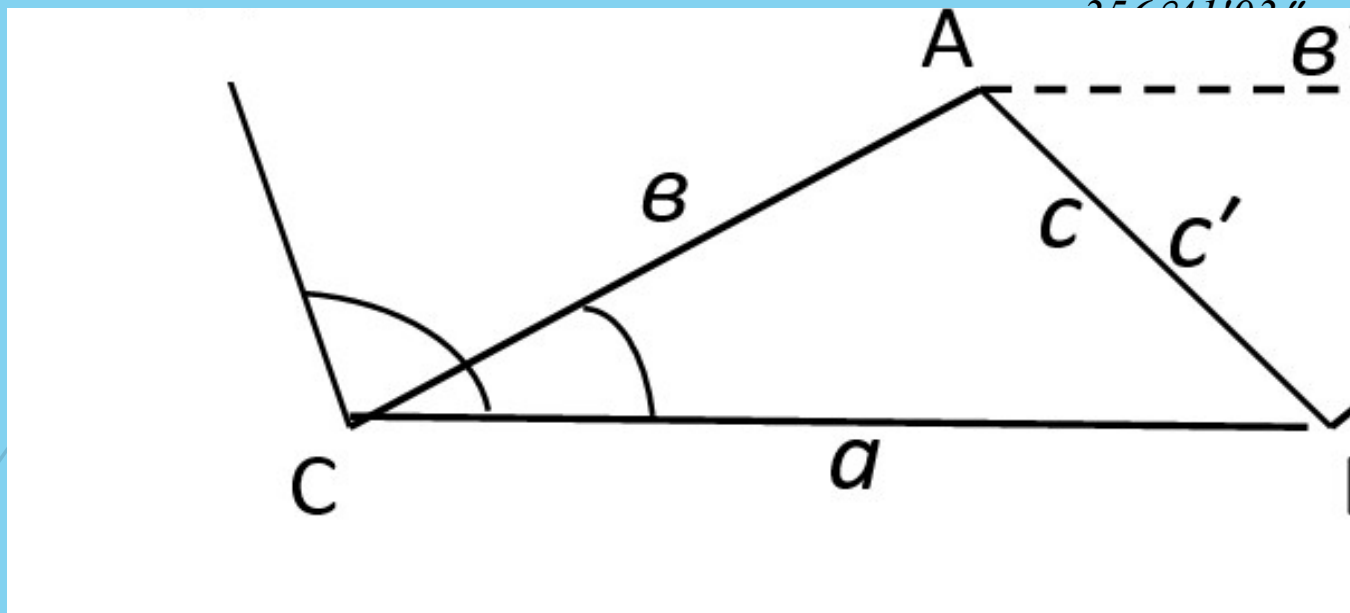
$$\alpha_{C'-D'} = \alpha_{A-C'} + \beta'_{AC'D'} \pm 180^{\circ}$$

По отвесу В

$$\alpha_{CB} = \alpha_{DC} + \beta_{DCB} \pm 180^{\circ}$$

$$\alpha_{B-C'} = \alpha_{46-B} + (B + B') \pm 180^{\circ}$$

$$\alpha_{C'-D'} = \alpha_{B-C'} + (\beta'_{AC'D'} + \gamma') \pm 180^{\circ}$$



$$X_C = 2045,543 \text{ м}; \quad Y_C = 4176,416 \text{ м}.$$

$$\beta_{DCB} = \alpha_{CB} - \alpha_{CD}$$

$$\beta_{DCA} = \alpha_{CA} - \alpha_{CD}$$

$$\gamma = \beta_{DCA} = \alpha_{CB} - \alpha_{CA}$$

$$\beta_{ACB} = 110^{\circ}10'12''$$

$$\gamma = 0^{\circ}30'10''$$

$$a = 8,325 \text{ м}$$

$$b = 4,983 \text{ м}$$

$$c = 3,340 \text{ м}$$

$$\beta_{AC'D'} = 167^{\circ}10'14''$$

$$\gamma' = 1^{\circ}02'25''$$

$$a' = 6,327 \text{ м}$$

$$b' = 9,664 \text{ м}$$

$$c' = 3,338 \text{ м}$$