A. Obliczenia współrzędnych punktów granicznych działki

0. Obliczenie azymutu A_{A-B}.

$N = 17$

$$A_{A-B} = r_{A-B} + K$$

IV: $K = 400^g$ | I: $K = 0^g$

III: $K = 200^g$ | II: $K = 200^g$

$\Delta y_{A-B} = y_B - y_A =$ **-70,155**

$\Delta x_{A-B} = x_B - x_A =$ **-114,607**

$x_B = x_{1397} = 515{,}750 + N \cdot (-0{,}101) =$ **514,033**

$y_B = y_{1397} = 215{,}285 + N \cdot (0{,}160) =$ **218,005**

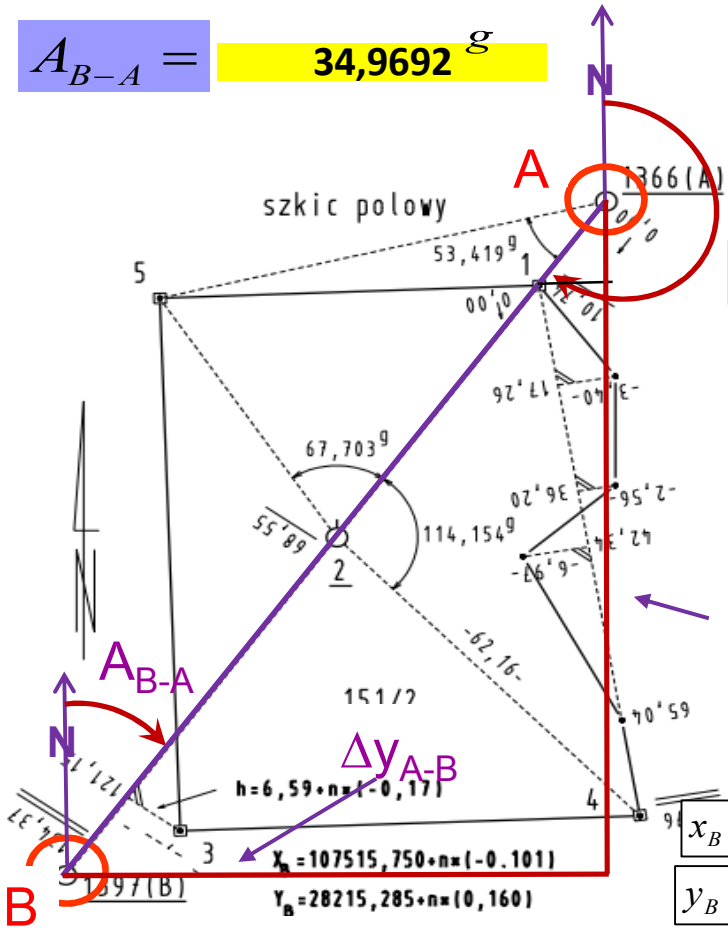
$x_A = x_{1366} =$ **628,64**

$y_A = y_{1366} =$ **288,16**

$$r_{A-B} = \arctan \frac{\Delta y_{A-B}}{\Delta x_{A-B}} = \arctan \frac{\text{-70,155}}{\text{-114,607}} = \text{34,9692}^g$$

$A_{A-B} =$ **34,9692** $^g + 200^g =$ **234,9692** ^{g}

$A_{B-A} =$ **34,9692** ^{g}



$A_{A-B} = A_{A-2}$

$y_A = y_{1366} = (28)288{,}160$

$x_A = x_{1366} = (107)628{,}640$

$A_{B-A} = A_{A-B} + 200^g$

$x_B = x_{1397} = (107)515{,}750 + N \cdot (-101)$

$y_B = y_{1397} = (28)215{,}285 + N \cdot (0{,}160)$

Kontrola obliczonego azymutu

$$\operatorname{tg}(A_{\text{A-B}} + 50^{g}) = \frac{\Delta x_{\text{A-B}} + \Delta y_{\text{A-B}}}{\Delta x_{\text{A-B}} - \Delta y_{\text{A-B}}}$$

$$L = P$$

4,1564384 = 4,1564384

A. Obliczenia współrzędnych punktów granicznych działki

1. Obliczenie współrzędnych punktu granicznego nr 1 z proporcji.

$$x_1 = x_A + \Delta x_{A-1}$$

$$y_1 = y_A + \Delta y_{A-1}$$

$$d_{A-1} = \mathbf{10{,}74}$$

$$d_{A-B} = \sqrt{(\Delta x_{A-B})^2 + (\Delta y_{A-B})^2} = \mathbf{134{,}374}$$

$$\Delta y_{A-B} = y_B - y_A = \mathbf{-70{,}155}$$

$$\Delta x_{A-B} = x_B - x_A = \mathbf{-114{,}607}$$

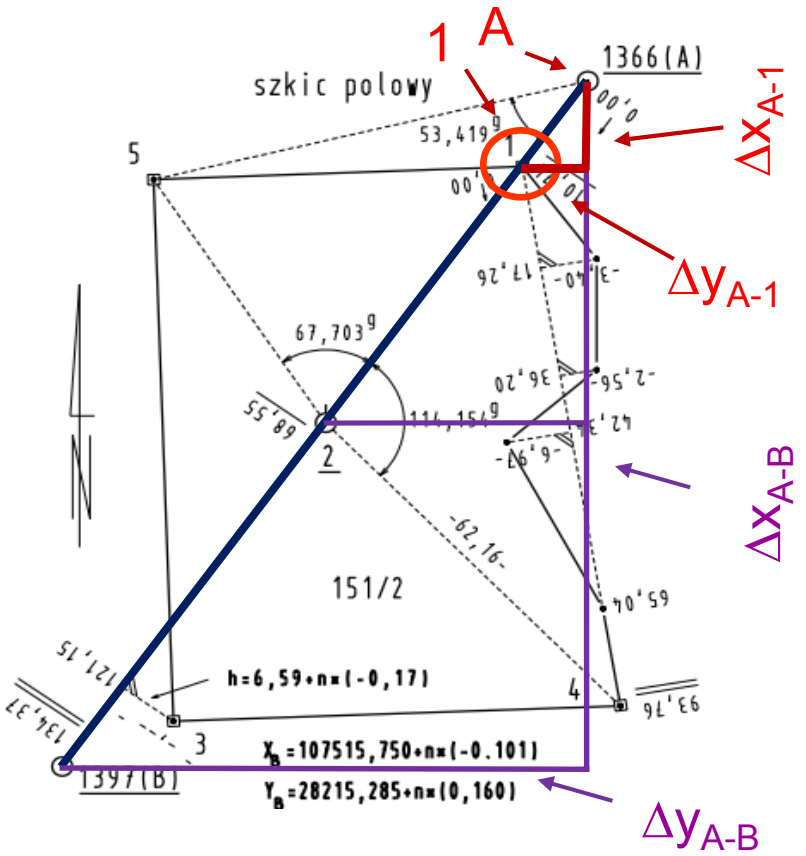
$$\frac{d_{A-1}}{d_{A-B}} = \frac{\Delta x_{A-1}}{\Delta x_{A-B}} = \frac{\Delta y_{A-1}}{\Delta y_{A-B}}$$

$$\Delta x_{A-1} = \frac{d_{A-1} \cdot \Delta x_{A-B}}{d_{A-B}} = \mathbf{-9{,}160}$$

$$\Delta y_{A-1} = \frac{d_{A-1} \cdot \Delta y_{A-B}}{d_{A-B}} = \mathbf{-5{,}607}$$

$x_1 = x_A + \Delta x_{A-1} =$ **628,640 -9,160 = 619,48**

$y_1 = y_A + \Delta y_{A-1} =$ **288,160 -5,607 = 282,55**



A. Obliczenia współrzędnych punktów granicznych działki

2. Obliczenie współrzędnych punktu osnowy nr 2 z azymutu.

$\Delta y_{A-B} = y_B - y_A =$ **-70,155**

$\Delta x_{A-B} = x_B - x_A =$ **-114,607**

$d_{A-2} =$ **68,55**

$A_{A-B} = r_{A-B} + K$

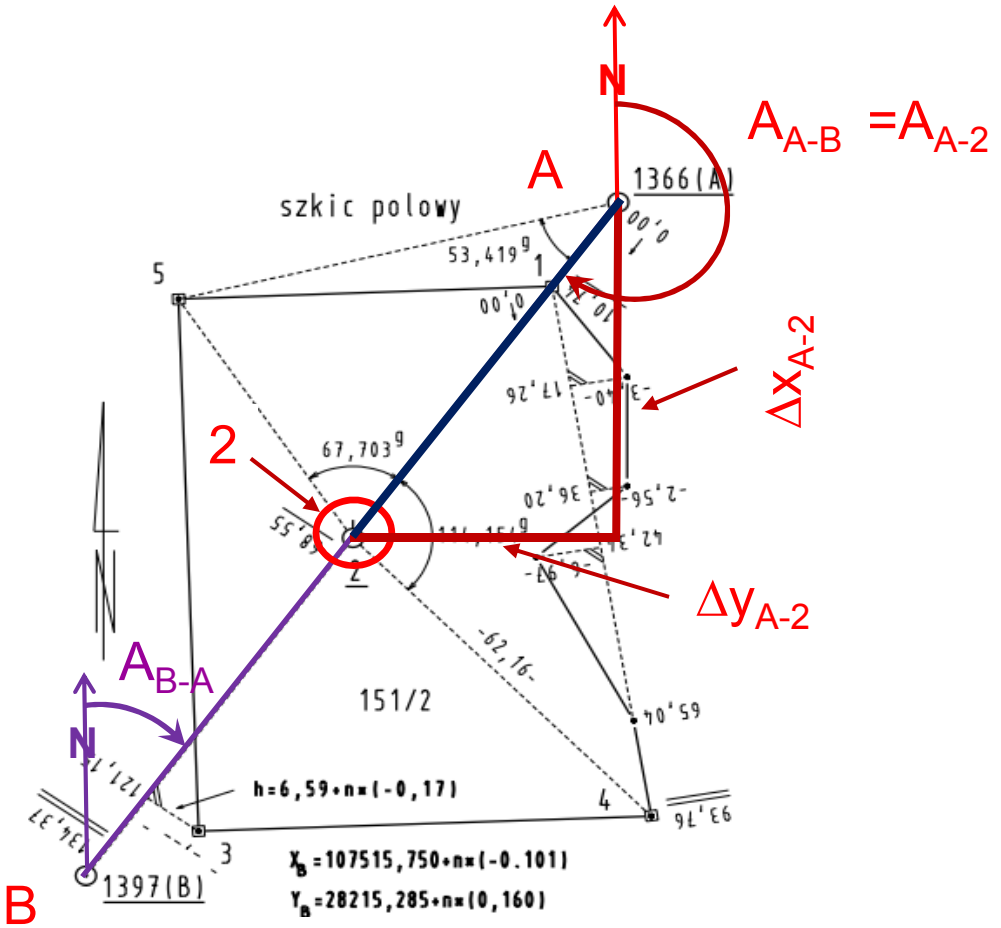
$r_{A-B} = \arctan \frac{\Delta y_{A-B}}{\Delta x_{A-B}} + K =$ **234,969 ^{g} + 200 ^{g} = 234,9692 ^{g}**

$\Delta x_{A-2} = d_{A-2} \cdot \cos A_{A-2} =$ **-58,466**

$\Delta y_{A-2} = d_{A-2} \cdot \sin A_{A-2} =$ **-35,789**

$x_2 = x_A + \Delta x_{A-2} =$ **628,640 -58,466 = 570,17**

$y_2 = y_A + \Delta y_{A-2} =$ **288,160 -35,789 = 252,37**



Kontrola 1 i 2

$$d_{1-2}(obl.) = \sqrt{(\Delta x_{1-2})^2 + (\Delta y_{1-2})^2} =$$ **57,810**

$$\Delta x_{1-2} = x_2 - x_1 =$$ **-49,306**

$$\Delta y_{1-2} = y_2 - y_1 =$$ **-30,182**

$$d_{1-2}(pom.) = b_2 - b_1 =$$ **68,55 — 10,74 = 57,81**

$$d_{1-2}(obl.) - d_{1-2}(pom.) \leq \pm(0{,}05m + 0{,}07m/km)$$

A. Obliczenia współrzędnych punktów granicznych działki

3. Obliczenie współrzędnych punktu granicznego nr 3 z domiarów.

$b_3 =$ **121,15** $h_3 = 6{,}59 + N \cdot (-0{,}17) =$ **3,70**

$A_{A-B} =$ **234,9692** ^{g}

-h

$$x_3 = x_A + b_3 \cdot \cos A_{AB} - h_3 \cdot \sin A_{AB}$$

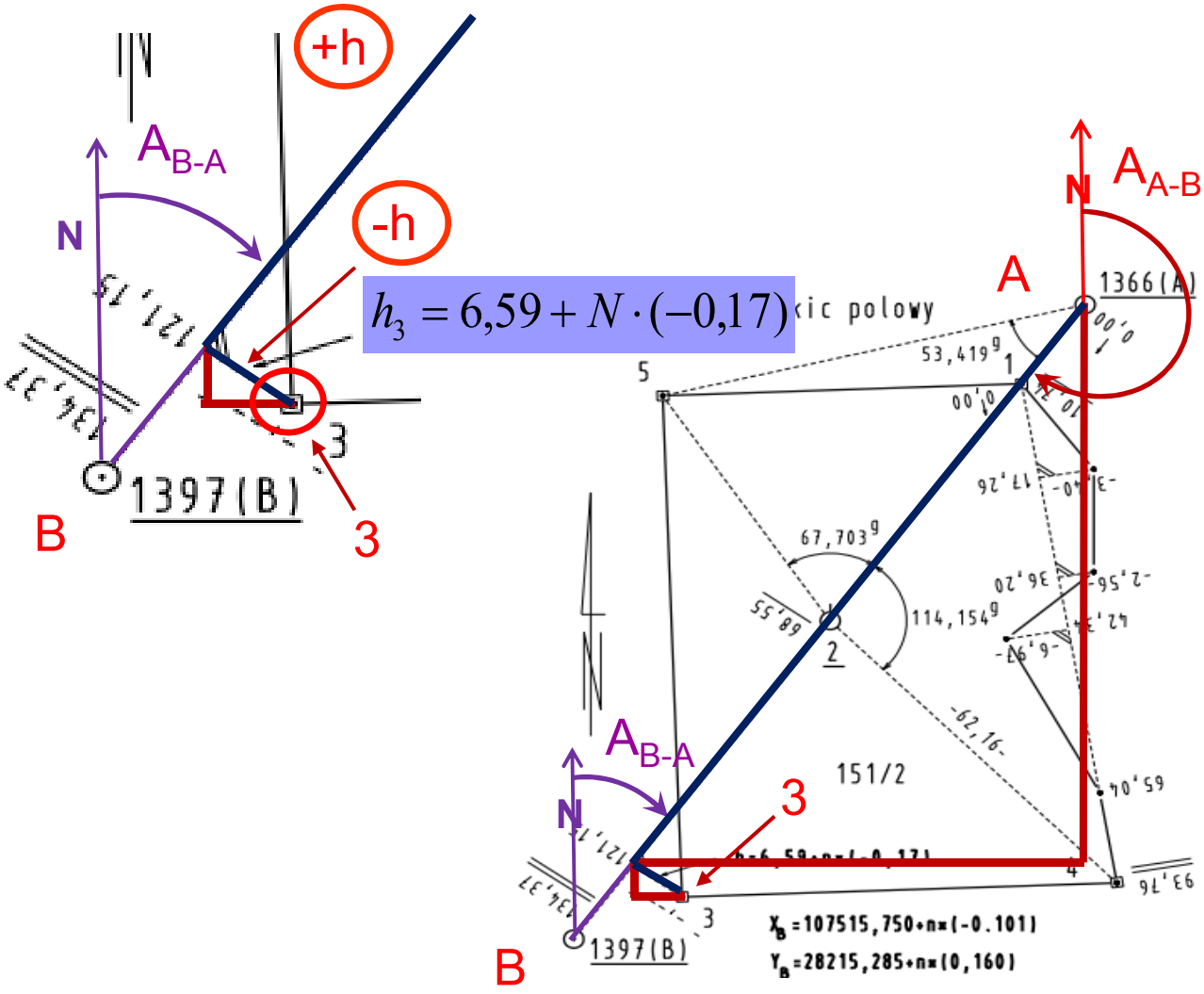
$x_3 =$ **628,640 -103,328 -1,932 = 523,38**

-h

$$y_3 = y_A + b_3 \cdot \sin A_{AB} + h_3 \cdot \cos A_{AB}$$

$y_3 =$ **288,160 -63,251 + 3,156 = 228,06**

$$(\Delta x_{A-3}, \Delta y_{A-3}) = \begin{vmatrix} \cos A_{A-B} & \sin A_{A-B} \\ h_3 & b_3 \end{vmatrix}_{1,2}$$



Kontrola 3

$b_3 = 134{,}37 - 121{,}15 =$ **13,22** $h_3 = 6{,}59 + N \cdot (-0{,}17) =$ **3,70**

$A_{B-A} =$ **34,9692** ^{g}

+h

$$x_3 = x_B + b_3 \cdot \cos A_{BA} - h_3 \cdot \sin A_{BA}$$

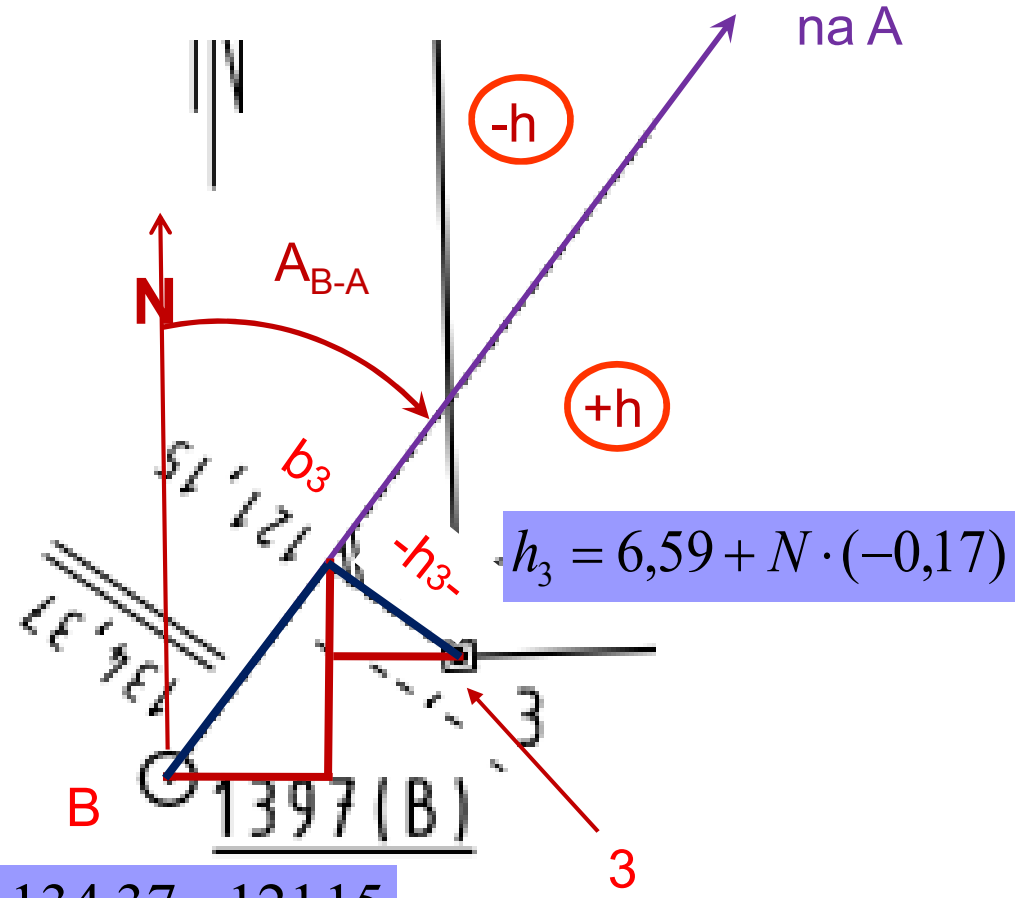
$x_3 =$ **514,033 + 11,279 -1,932 = 523,38**

+h

$$y_3 = y_B + b_3 \cdot \sin A_{BA} + h_3 \cdot \cos A_{BA}$$

$y_3 =$ **218,01 + 6,904 + 3,156 = 228,06**

$$(\Delta x_{B\text{-}3}, \Delta y_{B\text{-}3}) = \begin{vmatrix} \cos A_{B\text{-}A} & \sin A_{B\text{-}A} \\ h_3 & b_3 \end{vmatrix}_{1,2}$$



$b_3 = 134{,}37 - 121{,}15$

$h_3 = 6{,}59 + N \cdot (-0{,}17)$

A. Obliczenia współrzędnych punktów granicznych działki

4. Obliczenie współrzędnych punktu granicznego nr 4 biegunowo.

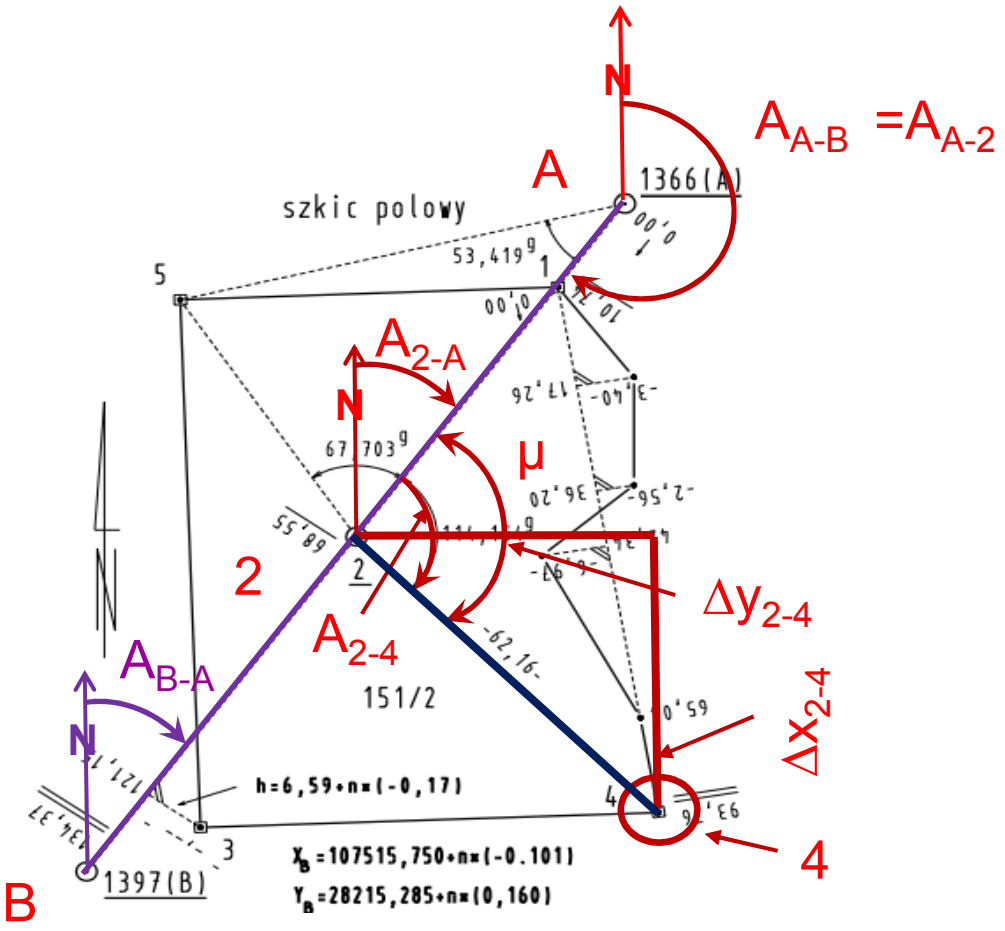
$d_{A-2} =$ **62,16** $\quad \mu =$ **114,154** ^{g}

$A_{2-A} =$ **34,9692** ^{g}

$A_{2-4} = A_{2-A} + \mu =$ **149,1232** ^{g}

$x_4 = x_2 + \Delta x_{2-4} =$ **570,17 -43,344 = 526,83**

$y_4 = y_2 + \Delta y_{2-4} =$ **252,37 + 44,555 = 296,93**



Kontrola 4

$$d_{1-4}(obl.) = \sqrt{(\Delta x_{1-4})^2 + (\Delta y_{1-4})^2} =$$ **93,758**

$$\Delta x_{1-4} = x_4 - x_1 =$$ **-92,65**

$$\Delta y_{1-4} = y_4 - y_1 =$$ **14,37**

$$d_{1-4}(pom.) =$$ **93,76**

$$d_{1-4}(obl.) - d_{1-4}(pom.) \leq \pm(0{,}05m + 0{,}07m/km)$$

A. Obliczenia współrzędnych punktów granicznych działki

5. Obliczenie współrzędnych punktu granicznego nr 5 wcięciem kątowym.

$d_{1-2} =$ **57,810** $\qquad \alpha =$ **53,419** ^{g}

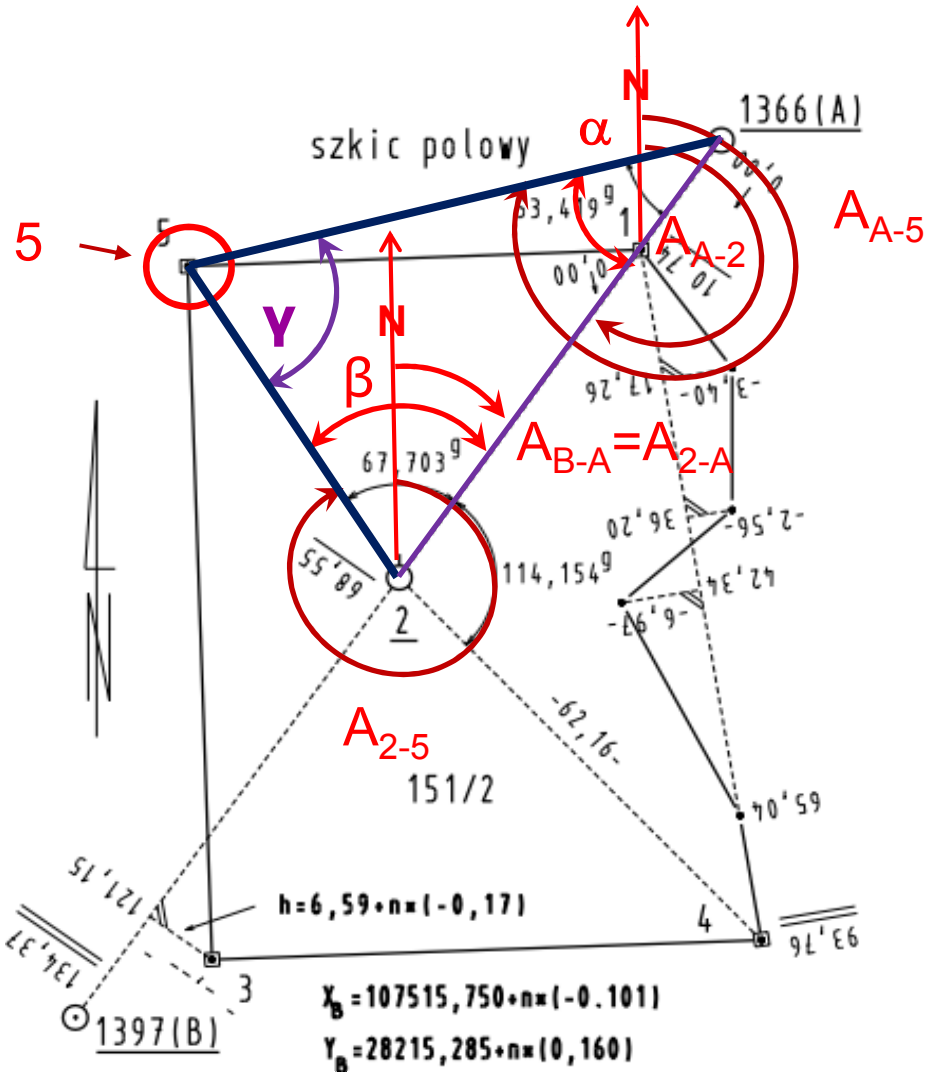
$A_{A-2} =$ **234,9692** ^{g}

$A_{A-5} = A_{A-2} + \alpha =$ **288,3882** ^{g}

$$\frac{\sin\beta}{d_{A-5}} = \frac{\sin\gamma}{d_{A-2}} \qquad d_{A-5} = \frac{d_{A-2}\cdot\sin\beta}{\sin(\alpha+\beta)} =$$ **63,372**

$x_5 = x_A + \Delta x_{A-5} =$ **628,64 -11,495 = 617,15**

$y_5 = y_A + \Delta y_{A-5} =$ **288,16 -62,321 = 225,84**



Kontrola 5

$d_{1-2} =$ 57,810 $\beta =$ 67,703 ^{g}

$A_{2-A} =$ 34,9692 ^{g}

$A_{2-5} = A_{2-A} - \beta =$ -32,7338 ^{g} + 400 ^{g}

$A_{2-5} =$ 367,2662 ^{g}

$$\frac{\sin\alpha}{d_{2-5}} = \frac{\sin\gamma}{d_{A-2}} \qquad d_{2-5} = \frac{d_{A-2}\cdot\sin\alpha}{\sin(\alpha+\beta)} =$$ 53,9463

$x_5 = x_2 + \Delta x_{2-5} =$ 570,17 + 46,971 = 617,145

$y_5 = y_2 + \Delta y_{2-5} =$ 252,37 -26,532 = 225,839

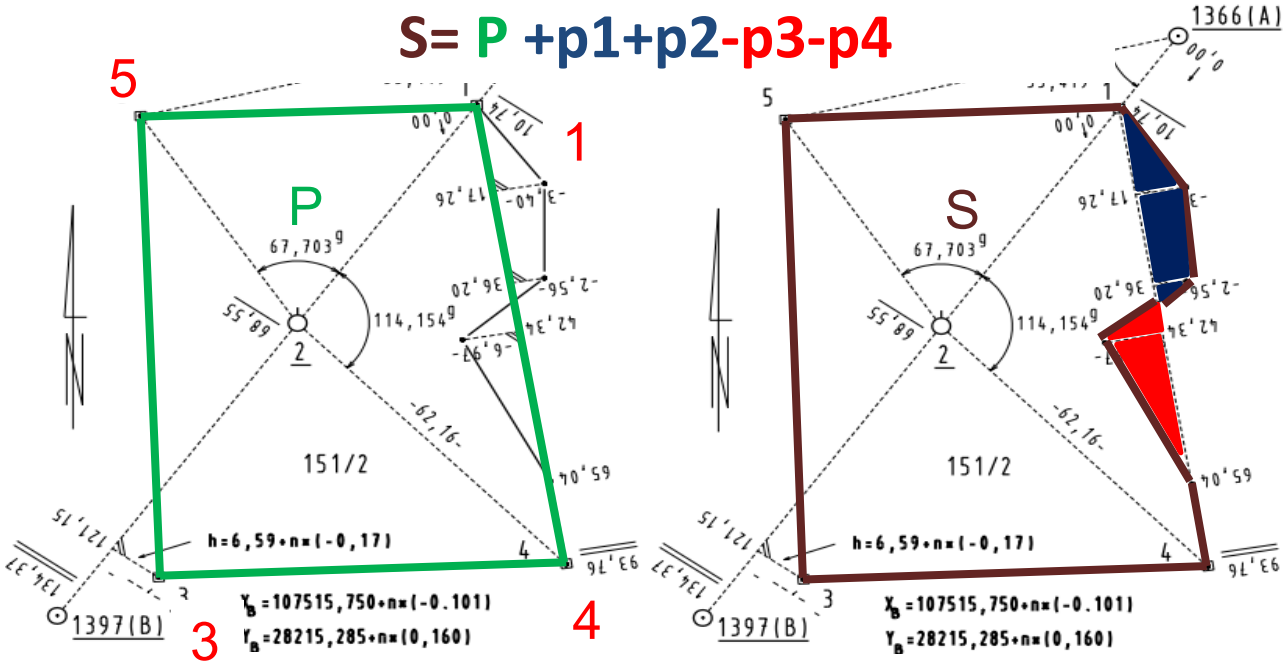
$$(x_5, y_5) = \begin{vmatrix} x_A & y_A \\ -1 & \operatorname{ctg}\beta \end{vmatrix} \begin{vmatrix} x_2 & y_2 \\ 1 & \operatorname{ctg}\alpha \end{vmatrix}_{(1,2)}$$

$$x_5 = \frac{x_A\cdot ctg\beta + y_A + x_2\cdot ctg\alpha - y_2}{ctg\beta + ctg\alpha} =$$ 617,145

$$y_5 = \frac{-x_A + y_A\cdot ctg\beta + x_2 + y_2\cdot ctg\alpha - y_2}{ctg\beta + ctg\alpha} =$$ 225,839

B. Obliczenia pola powierzchni działki

S= P +p1+p2-p3-p4



$$2P = x_3(y_5 - y_4) + x_5(y_1 - y_3) + x_1(y_4 - y_5) + x_4(y_3 - y_1) =$$ **11752,5**

$$2P = y_3(x_5 - x_4) + y_5(x_1 - x_3) + y_1(x_4 - x_5) + y_4(x_3 - x_1) =$$ **-11752,5**

$$p_1 = \frac{a_1 \cdot h_1}{2} =$$ **29,3**

$$p_2 = \frac{(a_1 + a_2) \cdot h_2}{2} =$$ **56,4**

$$p_3 = \frac{(a_2 - a_3) \cdot h_3}{2} =$$ **-13,5**

$$p_4 = \frac{-a_3 \cdot h_4}{2} =$$ **-79,1**