(CODY'S COROLLARY)

IN THE SOLVING OF THE AMBIGUOUS CASE (SSA) FOR A TRIANGLE WITH STANDARD LABELING GIVEN (WITHOUT LOSS OF GENERALITY) a, b, AND α, WHEN $\sin\beta < 1$

- IF $\beta_1 \leq \alpha$, THEN $\beta_2 = 180 - \beta_1$ DOES NOT GENERATE A POSSIBLE TRIANGLE. (I)

- IF $\beta_1 > \alpha$, THEN $\beta_2 = 180 - \beta_1$ IS A SECOND POSSIBLE ANGLE WHICH GENERATES A SECOND SOLUTION. (II)

- PROOF -

FIRST ASSUME $\sin\beta < 1$ & $\beta_1 \leq \alpha$ — BEGIN PROOF OF CASE I.

WE KNOW $\beta_2 = 180 - \beta_1$ — FROM "AMBIGUOUS CASE THM"

$\therefore \beta_1 = 180 - \beta_2$ — ALGEBRA

THUS $180 - \beta_2 \leq \alpha$ — B/C $\beta_1 \leq \alpha$ & $\beta_2 = 180 - \beta_1$

SO, $180 \leq \alpha + \beta_2$ — ALGEBRA

$\therefore \beta_2$ IS NOT A POSSIBLE ANGLE FOR β & DOES NOT GENERATE A SOLUTION TRIANGLE — BY "AMBIGUOUS CASE THM"

NOW IF $\beta_1 > \alpha$ — BEGIN PROOF OF CASE II.

AGAIN, WE KNOW $\beta_2 = 180 - \beta_1$ — FROM "AMBIGUOUS CASE THM"

$\therefore \beta_1 = 180 - \beta_2$ — ALGEBRA

THUS $180 - \beta_2 > \alpha$ — B/C $\beta_1 \leq \alpha$ & $\beta_2 = 180 - \beta_1$

SO, $180 > \alpha + \beta_2$ — ALGEBRA

$\therefore \beta_2$ IS A POSSIBLE ANGLE FOR β & DOES GENERATE A SECOND SOLUTION — BY "AMBIGUOUS CASE THM"

THUS, CODY'S COROLLARY IS PROVED TO BE TRUE. ∎