wyprowadzenie wzoru na azymut, znaja wspolrzedne geograficzne 2. punktow.

$$a = 90^o - \varphi_1$$

$$c = 90^o - \varphi_2$$

$B = \lambda_1 + \lambda_2$, badz $B = \lambda_2 - \lambda_1$ w zaleznosci od polozenia

$$sin(C) \cdot sin(b) = sin(c) \cdot sin(B) \tag{1}$$

$$sin(a) \cdot cos(B) = sin(c) \cdot cos(b) - cos(c) \cdot sin(b) \cdot cos(A) \tag{2}$$

$$cos(a) = cos(c) \cdot cos(b) + sin(c) \cdot sin(c) \cdot cos(A) \tag{3}$$

z (1)

$$sin(C) = \frac{sin(B) \cdot sin(c)}{sin(b)}$$

musimy wiec znalec kat b i gotowe: z (2)

$$cosA = \frac{cos(a) - cos(c) \cdot cos(b)}{sin(c) \cdot sin(b)}$$

wkladamy do (3)

$$sin(a) \cdot cos(B) = sin(c) \cdot cos(b) - cos(c) \cdot sin(b) \cdot \frac{cos(a) - cos(c) \cdot cos(b)}{sin(c) \cdot sin(b)}$$

w ostatnim czlonie $sin(b)$ sie skraca

$$sin(a) \cdot cos(B) = sin(c) \cdot cos(b) - ctg(c) \cdot (cos(a) - cos(c) \cdot cos(b))$$

$$sin(a) \cdot cos(B) = sin(c) \cdot cos(b) - ctg(c) \cdot cos(a) + ctg(c) \cdot cos(c) \cdot cos(b)$$

tu wyciagniemy przed nawias wyraz $cos(b)$

$$sin(a) \cdot cos(B) = cos(b) \cdot (sin(c) - ctg(c) \cdot cos(a) + ctg(c) \cdot cos(c)) stad \Rightarrow$$

$$cos(b) = \frac{sin(a) \cdot cos(B)}{sin(c) + ctg(c) \cdot (cos(c) - cos(a))}$$

wstawmy $cos(b)$ do $sin(C) = \frac{sin(B) \cdot sin(c)}{sin(b)}$ i mamy wreszcie: (uwaga, pelne skupienie koncentracji ;p)

$$sin(C) = \frac{sin(B) \cdot sin(c)}{\sqrt{1 - \frac{sin(a) \cdot cos(B)}{sin(c) + ctg(c) \cdot (cos(c) - cos(a))}}}$$