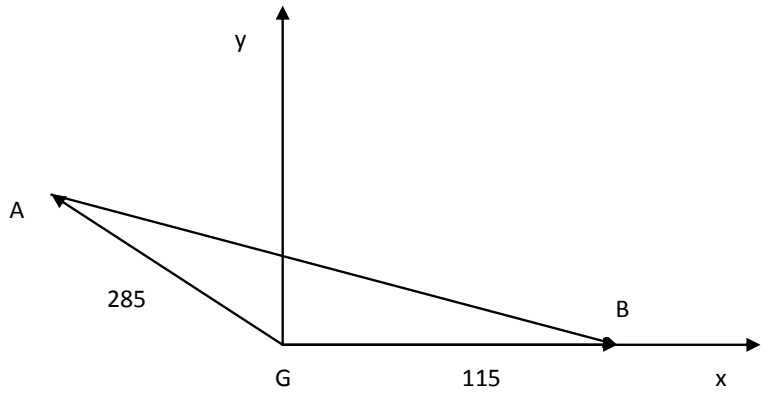

Let G is Guam, A is the point of the first stop and B is the destitation.

Let we have 3 vectors: $\vec{u} = \overrightarrow{AG}$, $\vec{v} = \overrightarrow{AB}$ and $\vec{w} = \overrightarrow{GB}$.

Then we have the following vector equation:

$$\vec{u} + \vec{v} = \vec{w}$$

Let $\vec{v} = (x, y)$. Then for projections we have the following 2 equations:

For x: $-285 * \cos 40° + x = 115$.

For y: $285 * \sin 40° + y = 0$.

Solving these equations we get:

$$x = 115 + 285 * \cos 40° \approx 333$$

$$y = -285 * \sin 40° \approx -183$$

Let's find the distance AB and the angle:

$|\vec{v}| = \sqrt{x^2 + y^2} = \sqrt{333^2 + 183^2} = \sqrt{110889 + 33489} \approx 380$ km.

Angle: $A = \text{atan}\left|\frac{y}{x}\right| = \text{atan}\left|-\frac{183}{333}\right| \approx 29°$.

So, the ship must sail 380 km at 29 degrees south of east.