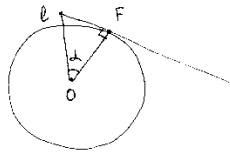Answer on Question #81575, Physics / Astronomy | Astrophysics

Question:

A pilot who is 60km above from sea level watches sun rise at 0546h .At what time observer in below the plane can watch the sun rise?

Solution:

$\cos\alpha = \dfrac{R}{R+l}$, respectively $\alpha = arc\cos(\dfrac{1}{1+\dfrac{l}{R}})$, and as far as R = 6371 km, then α = 7.8°. In this case

$\tau = \dfrac{\alpha}{360} 24 \cdot 60 = 7.8 \cdot 4 = 31.2 (\text{min})$.

The answer:

Approximately at 06:17.