

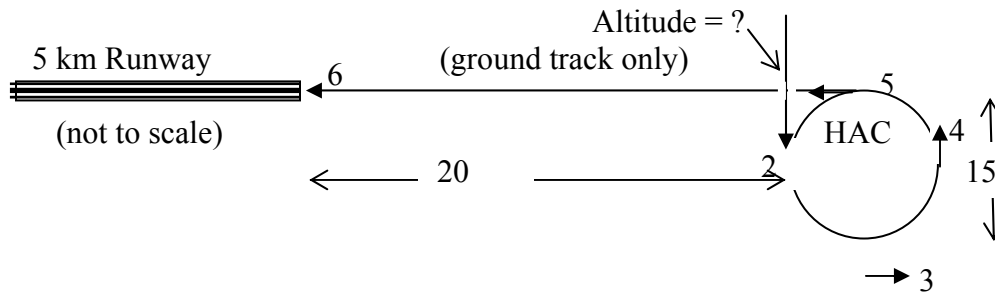
The JETS Challenge

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Challenge 61 – The Shuttle Altitude Challenge

Problem:

The Space Shuttle landing ground track crosses the centerline of the runway and spirals 270 degrees counterclockwise around the edge of a 15 km imaginary heading alignment cylinder (HAC) located 20 km from the end of the runway aim point where touchdown should occur (Point 6 below). The runway is 5 km long. The glide path is 5:1, which means that for every 5 km of horizontal distance the shuttle drops 1 km in altitude.



What is the altitude (kilometers) of the Shuttle when it first crosses the centerline of the runway?

Solution:

$$C = \frac{3}{4}(2\pi r) = \frac{3}{2}\pi r = \frac{3}{2}\pi(7.5) \cong 35.3429 \text{ km}$$

+ 7.5	km	
	42.8429	km
+ 20	km	
	62.8429	km
+ 7.5	km	
	70.3429	km (total track)
	5	

14.1 km