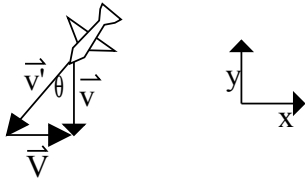


Chapter 3 Problem 30 †



Given

$v' = 370 \text{ km/h}$ (speed of airplane wrt the air)

$V = ?$ (speed of the jet stream)

$v = ?$ (ground speed of the airplane)

$\theta = 32^\circ$

Solution

Find the speed of the jet stream.

Since the ground speed of the plane is perpendicular to the jet stream, the three vectors form a right triangle. The magnitude of the jet stream vector is then

$$\sin \theta = \frac{V}{v'}$$

$$V = v' \sin \theta = (370 \text{ km/h}) \sin(32^\circ) = 196 \text{ km/h}$$

†Problem from Essential University Physics, Wolfson