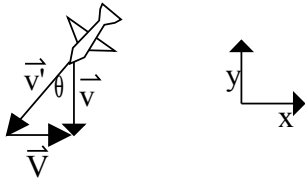


Chapter 3 Problem 28 †



**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

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

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

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†Problem from Essential University Physics, Wolfson