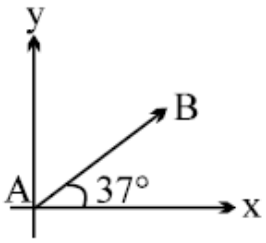
Answer on Question #44625-Physics-Mechanics-Kinematics-Dynamics

An object is flying with velocity 10i+12j m/s and wind is blowing along x axis with velocity u. If the object starts motion from A and after some time reaches point B, find the value of u

Solution



If the object starts motion from A and after some time reaches point B, its velocity $\bar{v} = (10 + u)i + 12j\,\frac{m}{s}$ must be collinear with vector $\overline{AB}$:

$$\frac{v_y}{v_x} = \tan 37°.$$

So

$$\frac{12}{(10+u)} = \tan 37° \to u = \frac{12}{\tan 37°} - 10 = 6\,\frac{m}{s}.$$

Answer: $6\,\frac{m}{s}$.