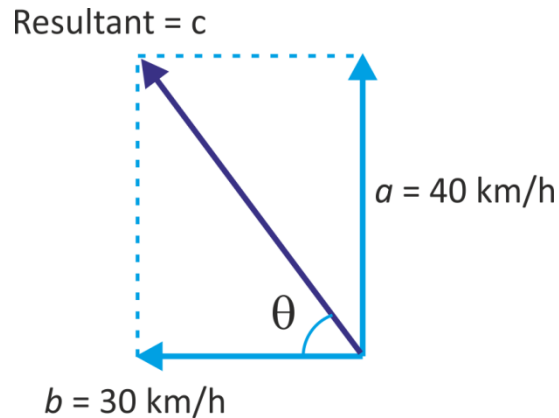


Answer on Question #50131, Physics, Mechanics | Kinematics | Dynamics

A car was moving due to north with a velocity of 40 km per hour. In which direction and with what speed the car will be moving, as seen from another car moving towards east with a speed of 30 km per hour?

Solution:

Relative motion from another car:



$$c^2 = a^2 + b^2$$
$$c = \sqrt{40^2 + 30^2} = 50 \text{ km/h}$$

$$\tan \theta = \frac{a}{b} = \frac{40}{30} = \frac{4}{3}$$

$$\theta = \tan^{-1}(4/3) = 53.13^\circ$$

Answer: speed of car will be 50 km/h in a direction 53.13 degree north of west.