Answer on Question #38399, Physics, Mechanics

Question:

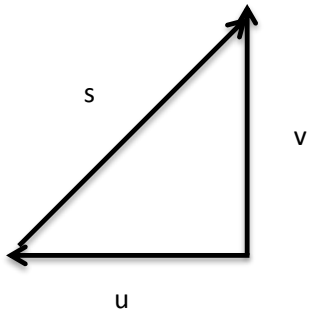
Wind is blowing from south at 5m/s to a cyclist it appears to be blowing from east at 5m/s the velocity of cyclist

Answer:

Velocity-addition formula:

If a wind is blowing relative to the cyclist with velocity 5 m/s from east ($\vec{v}$) and wind is blowing relative to the ground with velocity 5 m/s from south ($\vec{u}$), then the velocity of the cyclist relative to the ground equals the vector sum:

$$\vec{s} = \vec{v} - \vec{u}$$



Pythagorean theorem:

$$s^2 = u^2 + v^2 = \sqrt{50}\frac{m}{s} = 5\sqrt{2}\frac{m}{s}$$

And directed to north-east.

Answer: $5\sqrt{2}\frac{m}{s}$