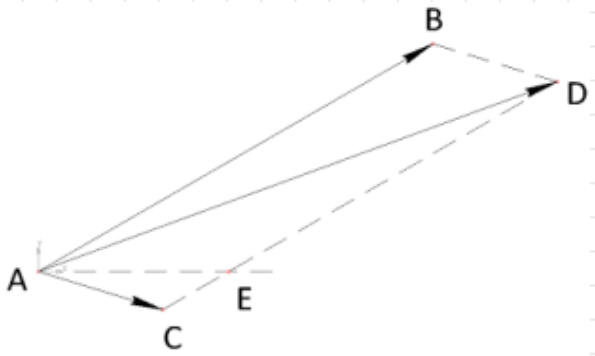
Question #72402, Math / Calculus

Let

$AB := 7\ \frac{m}{s}$ $\quad angEAB := 30\ deg$

$AC := 2\ \frac{m}{s}$ $\quad angEAC := 360\ deg - 343\ deg = 17\ deg$



Let's find out the ABD angle

$angABD := 180\ deg - (angEAC + angEAB) = 133\ deg$

Using the AB, BD=AC and ABD angle we can obtain the AD.
According to the cosine law

$AD^2 = AB^2 + AC^2 - 2 \cdot AB \cdot AC \cdot \cos(angABD)$

Then

$AD := \sqrt{AB^2 + AC^2 - 2 \cdot AB \cdot AC \cdot \cos(angABD)} = 8,4909\ \frac{m}{s}$

Using the AD, BD=AC and ABD angle we can obtain the DAB angle.
According to the sine law

$$\frac{\sin(angDAB)}{AC} = \frac{\sin(angABD)}{AD}$$

Then

$$angDAB := \arcsin\left(\frac{AC}{AD} \cdot \sin(angABD)\right) = 9,9197\ deg$$

and the EAD angle is

$angEAD := angEAB - angDAB = 20,0803\ deg$

The answer is 8.4909 m/s on a bearing of 20.0803 degrees

Solved in SMath Studio