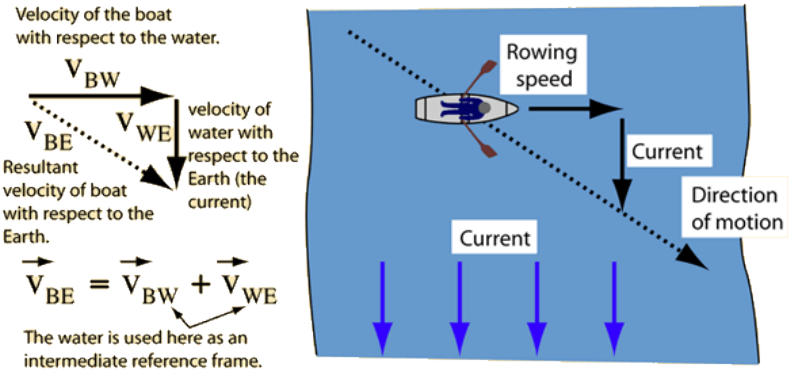
Answer on Question #49173, Physics, Mechanics | Kinematics | Dynamics

A boat begins on the best side of a river and heads straight east across the river with a speed of 1.9 Ft/s (relative to the water). The river water flows NORTH at the speed of 2.^ Ft/s (relative to the shore). The resultant velocity of the boat (relative to the shore) is approximately ___ Ft/s at __ degrees (-CCW from east)

Solution:



In our case,

$$v_{BE} = \sqrt{v_{BW}^2 + v_{WE}^2} = \sqrt{1.9^2 + 2^2} = 2.76 \text{ ft/s}$$

The angle is

$$\tan\theta = \frac{v_{BW}}{v_{WE}} = \frac{1.9}{2} = 0.95$$
$$\theta = \tan^{-1} 0.95 = 43.53°$$

Answer: 2.76 ft/s; 43.53°.