Answer on Question 55339, Physics, Other

Question:

A $150m$ long train is travelling from east to west at a speed of $20ms^{-1}$. A bird is flying from west to east at a speed of $5ms^{-1}$. How long will the bird take to cross the train?

Solution:

Let's first find the relative velocity of the bird with respect to train (when the two bodies are moving in the opposite directions, the relative velocity is equal to the sum of the individual velocities):

$$v_{bt} = v_b + v_t = 5ms^{-1} + 20ms^{-1} = 25ms^{-1}.$$

Finally, we can find the time that the bird take to cross the train:

$$t = \frac{s}{v_{bt}} = \frac{150m}{25ms^{-1}} = 6s.$$

Answer:

$t = 6s.$