Answer on Question #69261-Physics-Other

Two motorcycles are traveling due east with different velocities. However, 5.25 seconds later, they have the same velocity. During this 5.25-second interval, motorcycle A has an average acceleration of 4.43 m/s2 due east, while motorcycle B has an average acceleration of 17.5 m/s2 due east. (a) By how much did the speeds differ at the beginning of the 5.25-second interval, and (b) which motorcycle was moving faster?

Solution

(a)

$$d_1 = d_2$$

$$v_1 t + \frac{a_1 t^2}{2} = v_2 t + \frac{a_2 t^2}{2}$$

$$v_1 - v_2 = \frac{(a_2 - a_1)t}{2} = \frac{(17.5 - 4.43)5.25}{2} = 34.3 \frac{m}{s}.$$

(b) The motorcycle A was moving faster.