Section 4.4 – Problems with Constant Motion

Problem Set 3

Answer the following questions.

1. Two cargo trains take off from a terminal at the same time. The first train passes a checkpoint 1.75 hours after leaving. The second train passes the same marker 2 hours after leaving. If one train was traveling 15 mph faster than the other, what were their average speeds?
2. To track a hurricane, an airplane flew due west from Tampa at an average speed of 280 mph. After reaching the eye of the hurricane, the plane turns around and flies back at an average speed of 225 mph. If the plane is in the air for 3 hours, how far did it travel?
3. An athlete ran the length of a track at 325 meters per minute and then jogged back to the starting point at 100 meters per minute. How long is the course if she returned to the starting point 8.5 minutes after she left?
4. Two cars leave Chicago for Milwaukee at the same time. The difference between their speeds is 15 miles per hour. If the slower car reaches Atlanta in one hour and the slower car arrives fifteen minutes later, how fast were they going?
5. A man flies between two cities on business once a week, averaging 550 mph. If there's a strong headwind on the return trip and his speed is reduced by 150 mph then the trip takes an half hour longer. What is his travel time at the higher speed?
6. An express train can make a round trip between two cities in ten hours where it takes a freight train traveling at 30 mph less, 8 hours. What speeds are the trains traveling and what is the distance between the cities?
7. A ship must average 12 knots to make an 5 hour run on schedule. If the current increases their speed to 15 knots for the first two hours, how fast does the ship have to go for the remaining three hours to arrive on time? (A knot is one nautical mile per hour.)

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