Section 4.4 – Problems with Constant Motion

Problem Set 2

Answer the following questions.

1. Two cargo trains take off from a terminal at the same time. The first train passes a checkpoint 1 hour after leaving. The second train passes the same marker 1.75 hours after leaving. If one train was traveling 75 mph faster than the other, what were their average speeds?

2. To track a hurricane, an airplane flew due east from St. Augustine at an average speed of 300 mph. After reaching the eye of the hurricane, the plane turns around and flies back at an average speed of 275 mph. If the plane is in the air for 5.75 hours, how far did it travel?

3. An athlete ran the length of a track at 300 meters per minute and then jogged back to the starting point at 200 meters per minute. How long is the course if she returned to the starting point 7.5 minutes after she left?

4. Two cars leave Columbia for Atlanta at the same time. The difference between their speeds is 13 miles per hour. If the slower car reaches Atlanta in three hours and the slower car arrives a half hour later, how fast were they going?

5. A man flies between two cities on business once a week, averaging 300 mph. If there's a strong headwind on the return trip and his speed is reduced by 50 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 five hours where it takes a freight train traveling at 15 mph less, 4.5 hours. What speeds are the trains traveling and what is the distance between the cities?

7. A ship must average 15 knots to make an 6 hour run on schedule. If bad weather forces the ship to slow to 12 knots for the first hour, how fast does the ship have to go to arrive on time? (A knot is one nautical mile per hour.)