Tortoise and Hare Race Exploration Questions

Consider the following story: A tortoise and a hare agree to a 100 mile race. The hare gives the tortoise a head start of half the distance to the finish line. Then the hare gets to the halfway mark as the tortoise crosses the 3/4 mark, the hare gets to the 3/4 mark as the tortoise crosses the 7/8 mark, and so on. Who wins??
Run several stages of the Tortoise and Hare Race, and answer the following questions:

- Who is ahead after 5, 10 and 15 time steps? By how much?

- Who is running faster? Calculate the average speed of the tortoise and the hare during each of the first four stages. Remember that the average speed can be measured as change in distance divided by change in time. What is happening to the speed of the tortoise and the speed of the hare as the race progresses?

- Will the tortoise or the hare ever win?