1. Hurricane Zoë, somewhat later in its lifecycle than in Homeworks 1-3, is moving at 5 kt when it makes landfall. (a.) Using Kraft’s equation $R_{TOT} = \frac{100}{C}$, where is $R_{TOT}$ the storm-total rainfall in inches and $C$ is the storm’s speed of motion in knots, what is the expected storm-total rainfall?

b. If Zoë speeds up to 10 kt just before landfall what will the storm-total rainfall be?

2. Earlier, when Zoë was 400 km away from the landfall point, the longest waves its winds generated were 450 m long and had a phase velocity of 97 km per hour. (a.) Recalling that the wave train moves with the group velocity and using the relationship between the group and phase velocities we discussed in class, how long will it take the waves that Zoë generated at this time to reach the landfall point?

b. A kilometer is 1000 meters and there are 3600 seconds in an hour. What is the waves’ phase velocity in meters per second?

c. What is the period in seconds of these longest waves?

d. If Zoë actually does move at 5 meters per second to the landfall point, how many hours ahead of the storm will these waves reach the landfall point?