Practice – 1

Once you feel confident with Maximum and Minimum Problems: Extreme Values of Distance and Time, complete problems 1 and 2. Check your answers by going to the Solutions tab in Moodle.

Instructions: Answer each of the following practice questions on a separate piece of paper. Step by step solutions are provided under the Solutions tab. You will learn the material more thoroughly if you complete the questions before checking the answers.

1.   At $10{:}00\,\text{am}$, a cargo ship is sailing west at $20\,\text{km/h}$. At the same time, a customs boat $60\,\text{km}$ due north of the ship is travelling south at $30\,\text{km/h}$. When will the boats be closest to each other?

2.   A cabin is situated on an island, $2\,\text{km}$ from the nearest point on the mainland. A store on the mainland, where supplies can be purchased, is $3\,\text{km}$ down the shoreline from that point. If a motor boat travels at a speed of $4\,\text{km/h}$ and the average person can walk $6\,\text{km/h}$, toward what point on the mainland should the boat be aimed in order to reach the store in the least time?