

# Fastest route

Solve the following optimization problem

We need to move from A to B

There are two ways to do this

- Via the boat (speed is  $V_1$ )
- Via the walk (speed is  $V_2$ )

Find the optimal path to minimize the traveling time

$$\min_{\theta} \frac{L_1}{V_1} + \frac{L_2}{V_2}$$

$$L_1 = 2R \cos \theta$$

$$L_2 = 2\theta R$$

