

# Math-Circle: Session 1

TIFR-CAM and ICTS

October 24, 2022

## Geodesic

Problem 1. In the following diagram, how would you find the point  $P$  on the line segment  $AB$  so that  $PR + PS$  is as small as possible? You can imagine that  $AR$  and  $BS$  are two vertical poles and signal transmitters are placed at  $R$  and  $S$ . The cost of sending a signal is directly proportional to the distance the signal has to travel. A person wants to place a receiver on the ground to receive signals from both the transmitters. Where should he/she place the receiver so that his total cost is as small as possible?

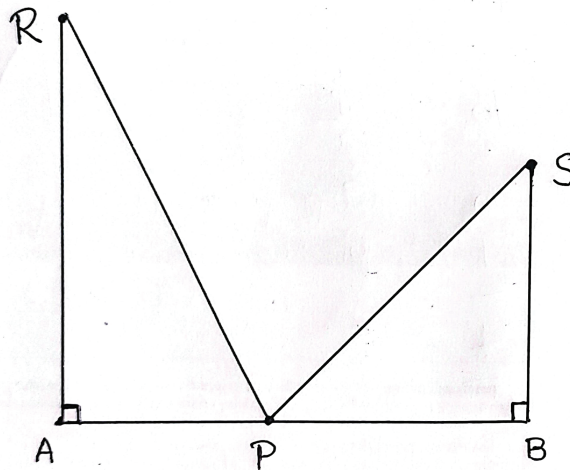


Figure 1: Figure shows the locations of two transmitters at  $R$  and  $S$ .  $P$  is the location of the receiver. The problem is to determine the optimum location of the receiver.