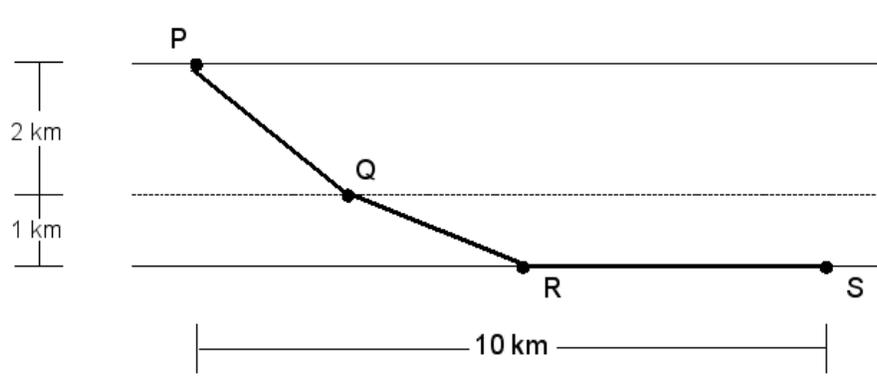


MA104 - Differential Calculus
Lesson 55: Solving Multivariate Optimization Problems III

1. You are given the task to lay water pipe between the nearest water treatment plant (P) and the water tanks at the site of the IMA (S). Among the many issues you face is the cost. The pipe could be laid in a straight line or as depicted below. However, different legs of the pipeline lie on different terrain and that impacts cost. From P to Q, the cost \$700 per kilometer of pipe; from Q to R the cost is only \$600 and from R to S it is \$500. Where do you locate points Q and R and how much will the project cost?



2. Find the points on the surface $y^2 = 9 + xz$ that are closest to the origin.

3. Work Problem 65 on Page 947, with $P = 100$.

4. If you have not already done so, work Problem 52 in Section 14.7.