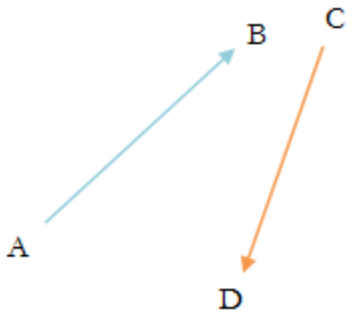
1146 – Closest Distance

Two men are moving concurrently, one man is moving from **A** to **B** and other man is moving from **C** to **D**. Initially the first man is at **A**, and the second man is at **C**. They maintain constant velocities such that when the first man reaches **B**, at the same time the second man reaches **D**. You can assume that **A, B, C** and **D** are 2D Cartesian co-ordinates. You have to find the minimum Euclidean distance between them along their path.



Input

Input starts with an integer **T (≤ 1000)**, denoting the number of test cases.

Each case will contain eight integers: $\mathbf{A_x}$, $\mathbf{A_y}$, $\mathbf{B_x}$, $\mathbf{B_y}$, $\mathbf{C_x}$, $\mathbf{C_y}$, $\mathbf{D_x}$, $\mathbf{D_y}$. All the co-ordinates are between **0** and **100**. $\mathbf{(A_x, A_y)}$ denotes **A**. $\mathbf{(B_x, B_y)}$ denotes **B** and so on.

Output

For each case, print the case number and the minimum distance between them along their path. Errors less than $\mathbf{10^{-6}}$ will be ignored.

Sample Input	Output for Sample Input
3 0 0 5 0 5 5 5 0 0 0 5 5 10 10 6 6 0 0 5 0 10 1 1 1	Case 1: 0 Case 2: 1.4142135624 Case 3: 1