direct case

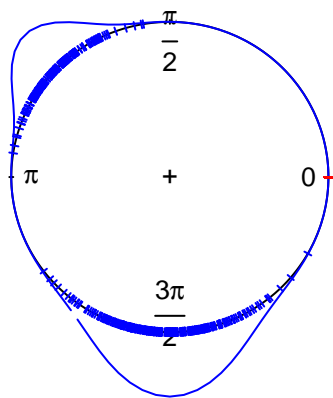**inverse problem**