**CSI1241 Systems Analysis**

## CT Problem #4

This exercise can be done either individually or in small groups.

Imagine a hole drilled in the Earth that passes through the centre of the Earth (figure 1). Suppose a ball is dropped from point P1. The ball will take a certain time, *t*, to travel from point P1 to point P2. Calculate *t*. What happens next? Why?

Consider figure 2. How long will it take for the same ball to travel from points P1 to P2 in figure 2?

Assumptions:

Neglect friction, the rotation of the earth and also assume that the Earth is a perfect sphere. Also assume that the acceleration due to gravity is 9.8ms-2 and the diameter of the Earth is 12742 km.

