

The latitude of Boston is comparable with the latitude of Rome in Italy:

Rome, Italy;	41:53:00N	12:30:00E
Boston, USA;	42:21:24N	71:03:25W

In this ICE, we estimate the distance between the points B (Boston) and R (Rome) in Euclidean space. By nature, the coordinates of these points are given in spherical coordinates, so that we have to convert them into rectangular coordinates. The radius is $r = 6582$. We assume the center of the earth is $(0, 0, 0)$. Assume that the x axis passes through Boston. To simplify the computations, we assume that both Rome and Boston have latitude 45 and that their longitude differs by 90 degrees. We determine first the Euclidean coordinates of B and R :

$$B = (\rho, \theta, \phi) = (6582, 0, \pi/4) \text{ spherical} \quad B =$$

$$R = (\rho, \theta, \phi) = (6582, \pi/2, \pi/4) \text{ spherical} \quad R =$$

What is the distance between these points? With distance we mean the distance between the two points and not the distance along the earth surface.

