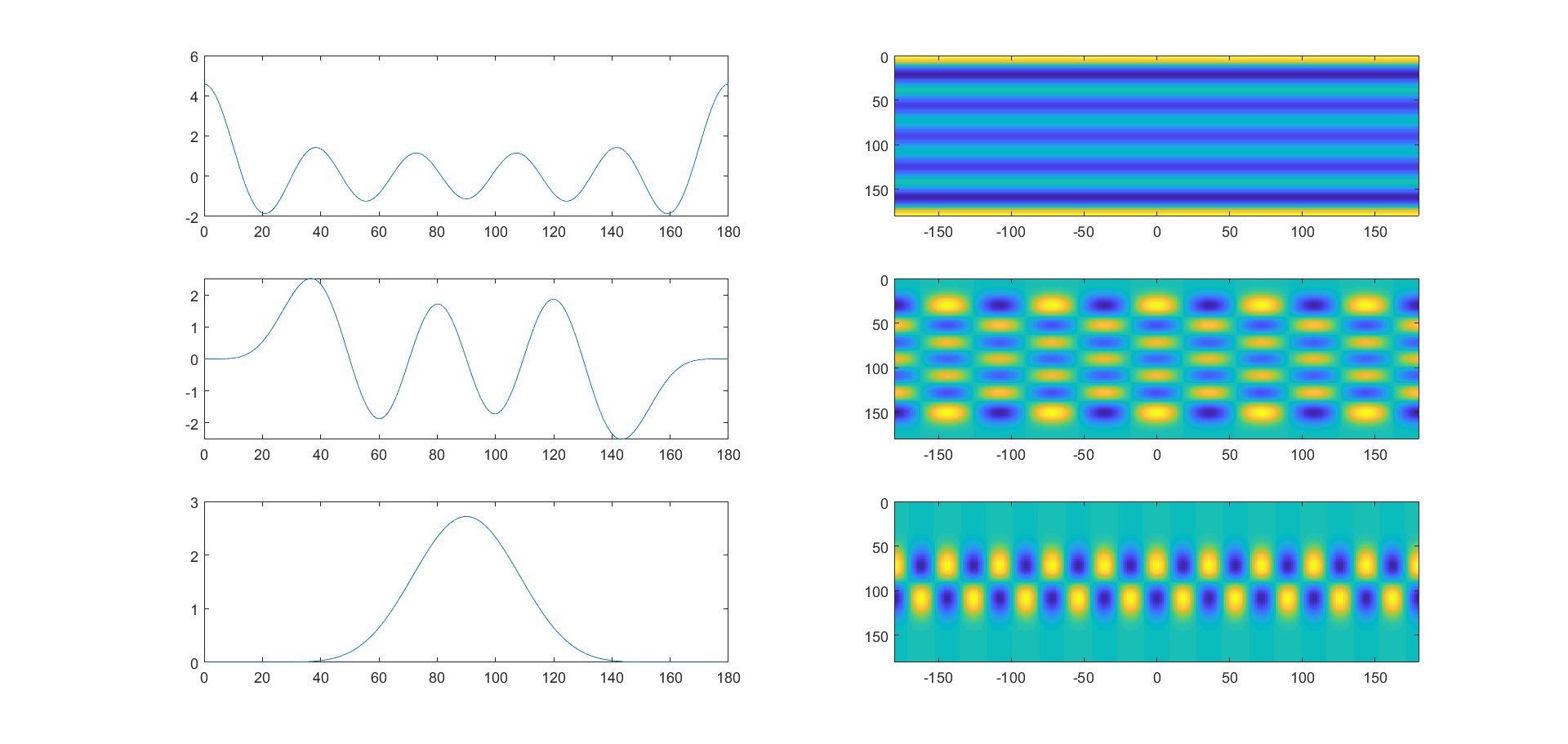
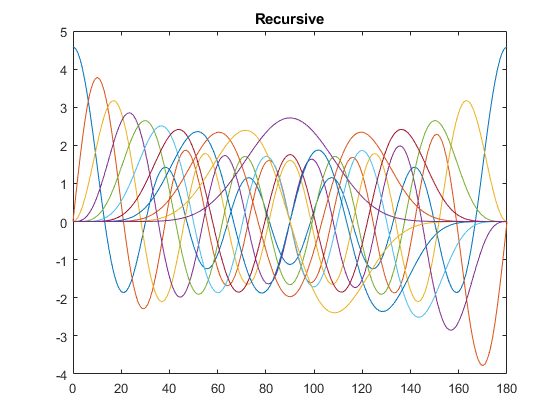
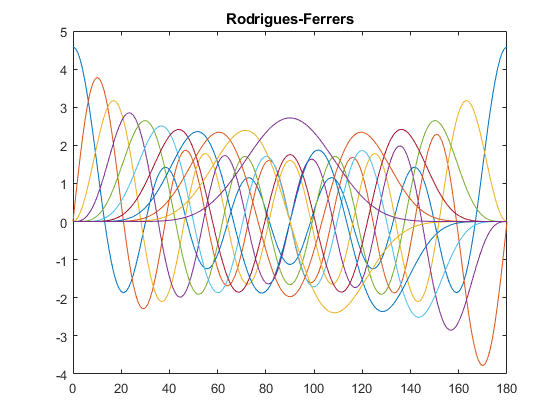
Task 1

1.1 Plm(cos(theta))



From up tp down: zonal, tesseral, sectorial

1.2

Zero crossings of legendre function: l-m

Zero crossings of spherical harmonics: l-m (n-s) m\*2 (w-e)

Task 2

Task 3

Yes for most latitudes

**Task 4**

Gravitational potential:

Coefficients and are given, together with the parameters , and r, we can get the potential:

Then we calculate the centrifugal part:

Finally we add them to get the gravity: