

4. (25 points) There are some advantages for a communication satellite to be in *geosynchronous* orbit, in which it always stays over a fixed point on the earth.

a) What are the orbital conditions for a satellite to be in geosynchronous orbit? Give an equation for all important parameters, define all of your variables and clearly state any other assumptions you have made.

b) What latitude or latitudes λ , does the orbit in part a) occupy?