Problem ♣–12
Due in DSC 222 by 12 noon, **Friday, November 09**, *2018*

Problem: Assume that Earth is a sphere with radius R. (In reality, R is about 6400 kilometers, but this has nothing to do with the solution of this problem. Express everything, including your answer, in terms of R.) A satellite has an elliptical orbit with the centre of Earth at one focus. The lowest point of the orbit is $5R$ above the surface of Earth, when the satellite is *directly above the North Pole*. The highest point of the orbit is $11R$ above the surface of Earth, when the satellite is *directly above the South Pole*. What is the height of the satellite above the surface of Earth, when the satellite is *directly above the equator* ?