ASTR120 Challenge Problem #1 – (Hamilton)
Optional, due before Midterm #1

In this challenge problem you will work out how large a shadow moons in our Solar System cast on their parent planets.

a) Draw an accurate picture and use algebra and geometry to determine the size of the shadow cast by a moon on its parent planet. Assume that the moon is spherical and that all orbits are circular. Type your equation into the planetary calculator at
http://janus.astro.umd.edu/astro/calculators/scalc.html
and produce a table of shadow sizes. Which moons cast the largest shadows?

b) How big is the Earth's shadow cast on the Moon? Rewrite your answer in terms of both Earth and Moon radii.