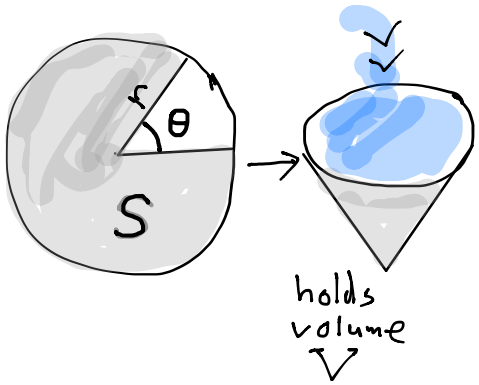
One can make a cone by taking a circular disc of radius r and cutting an angular sector out of it, with cut out sector having angle θ. See figure:



Suppose that the total area of the paper made by the disc after the sector is cut out is fixed to be S. What angle θ will maximize the volume V of water that this cone (help upright) can hold?