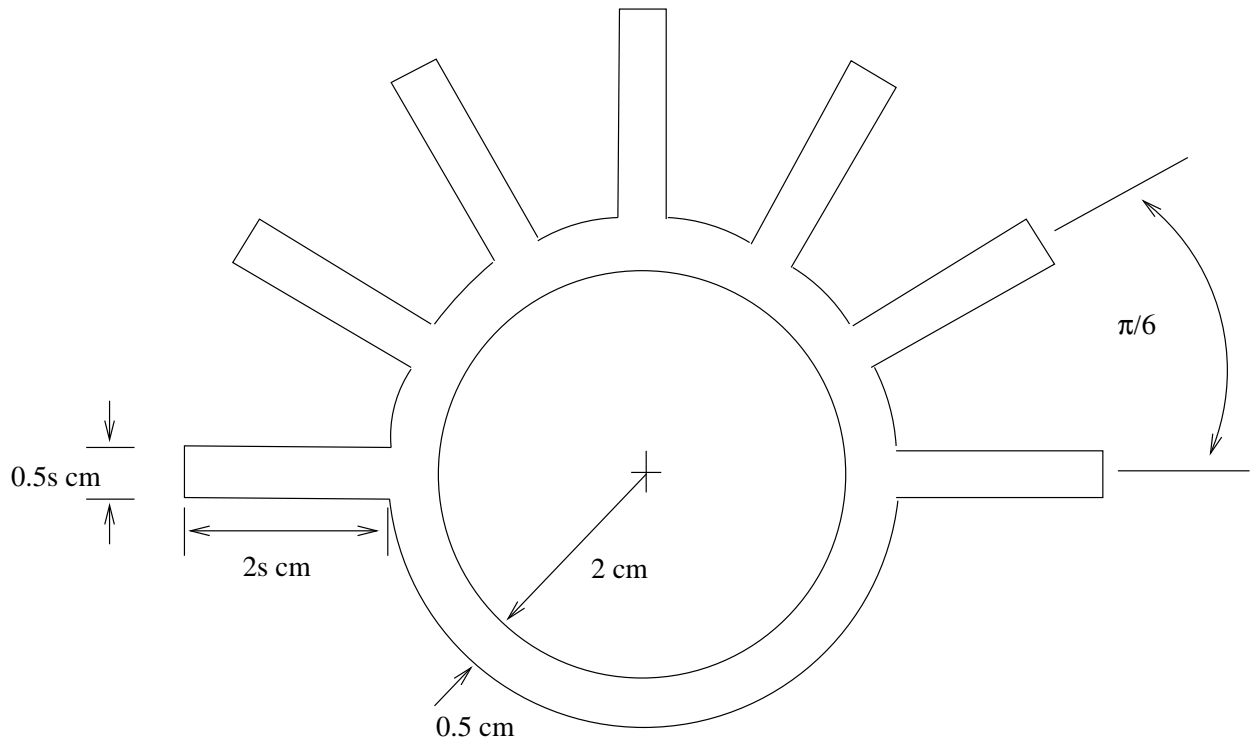


**HW 4: Due 2/25/04**

1. Shown below is a heat exchanger tube with fins. The tube transports boiling water at (100 C) and the outer surface is subject to convective heat transfer with a forced air heat transfer coefficient of  $h = 80 \text{ W/m}^2\text{C}$ . The far-field air temperature is 30 C. The exchanger is made of a copper alloy with  $k = 250 \text{ W/mC}$ . The size of the fins is parameterized by the parameter  $s$ . Compute the overall heat transfer (Watts) as a function of  $s$  over the range  $[0.25, 1]$ .



Your assignment should read like a mini-report. It should review the problem to be solved, present the governing relations and assumptions employed, the solution (of course), an indication of the accuracy of the solution, a discussion of the ramifications of the analysis. These points need not be long discussions – a couple of sentences will do for most points. I just want you to get used to properly presenting engineering analysis.