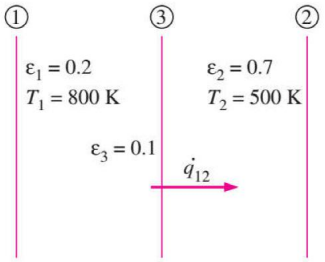
Week 6 — GANHUI 10712558

Task 1 Considering the same example you solved in the previous assignment (radiative heat transfer between two parallel plates), how many shields with epsilon = 0.1 should you add in order to have the new heat transfer rate to be 1% of the case without shields ?



ANSWER：

$$\dot{Q}_{12,\,N\text{ shields}} = \frac{A\sigma(T_1^4 - T_2^4)}{(N+1)\left(\frac{1}{\varepsilon} + \frac{1}{\varepsilon} - 1\right)} = \frac{1}{N+1}\dot{Q}_{12,\,\text{no shield}}$$

$$Q_{12nshiled} = 1/\mathrm{n} + 1 = Q_{12noshiled}$$

$$Q_{12nshiled} / Q_{12noshiled} = 1/\mathrm{n} + 1$$

1/100=1/n+1

n=99