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Question 1: write a summary (in your own words !, (in your own words !!!) about the convective heat transfer (half a page) and explain why increasing the thickness of a single pane glass does not increase the total resistane.

Convective heat transfer is the phenomenon of heat transfer that occurs during fluid flow, including gas and liquid like glass and others.

For example, when the air flows on the surface of a glass structure, the heat exchange between the glass surface and the glass surface can conform to the convective heat transfer process. When the air flows along the wall, not only does the air itself have a circulation, but there is also its own circulation inside the structure, but there may be no way to proceed seriously due to the thickness. When the circulation is flowing, heat flows. There is a gap in heat between the air and the surface, which results in the exchange of heat.

When increasing the thinkness of a single pane glass, the resistane of the glass must increase. When heat flows through the interface of two solids in contact, the interface itself exhibits significant thermal resistance to heat flow. The resistance increased by the thickness of the solid is too different from the resistance generated by the gas, so the effect on the total resistance is neglected.

Question 2: write an explanation about what mistakes you made in the class that resulted in wrong answers !!

When I did Example 2, I ignored the impact of air resistance and thus calculated less.

Question 3: solve the same probelm as that of double pane window with with the air-gap thickness of 13 mm and glass thickness of 6 mm, commment on your results

and explain why we have an optimal range for the air-gap's distance !

$$Q = \frac{T\infty_1 - T\infty_2}{R_{total}}$$

$$R_{total} = R_{conv,1} + R_{glass,1} + R_{glass,2} + R_{conv,2} + R_{air} = 329.13$$

Q=0.09

$$T_1 = T_{\infty 1} - QR_{conv,1}$$
$$T_1 = 20 - 0.075$$
$$T_1 = 19.925℃$$

When the air-gap's distance is too large, the resistance will fail.