

Heat Transfer Questions & Answers

Question by Student 201527130

professor, I have a question about Tube banks (staggered). Is minimum area located at between 1st line to 2nd line? If that's right, I think Is my thinking right?

You're on the right track, but this is not correct still. Work on it more — the diameter of the tubes should be somewhere in your areas.. Also, use the PREVIEW command and make sure your math show up clearly: your expressions are too close to each other and hard to read. Separate them on different lines.

Question by Student 201428239

Professor, I have a question about Assignment 7 of Q5. In this problem, Can I use correlation equation about vertical plane?? Or Should I use irregular solids?? And also, In your lecture note, there is an example about free conv H-T example(Desktop problem with $q=30W$). In that problem, we determined surface T first and then free convection heat transfer coefficient. But this problem is opposite. Can I determine free convection heat transfer coefficient without surface Temperature??? Thank you.

Use the most accurate correlation generally. Yes, you can find the h without knowing the surface temperature a priori through an iterative process.

Question by Student 201428239

Professor, I have a question about A7 of Q6. In this problem, I think I should use Nu as flow across a sphere. But in table, there is a expression about u_w (viscosity at the wall)what is it exactly?? Do I go right??

Well, as you mention, μ_w is the viscosity of the fluid at the wall determined at the temperature of the wall.

Question by Student 201428239

Professor, I have a question about A7 of Q6. I don't know how to find μ_w in this problem. Is it fine to assume this is same as μ_∞ ??

Find the wall temperature, and then find μ_w from this wall temperature.

Question by Student 201427135

Professor, I have a question about the class. You taught us about hydraulic diameter, example for river. But I can't understand why it doesn't have friction area on the both sides. I thought river has ground on bottom and on both sides (actually extended ground) also. Thank you.

True, it could be this way, but I was thinking of a river section where the sides are flowing water.

Question by Student 201527136

Professor, I have a question about heat transfer in pipe. You said ΔT_{lmtd} is almost same with $T_w - \frac{1}{2}(T_{b,o} - T_{b,i})$ when $\frac{T_w - T_{b,o}}{T_w - T_{b,i}} \geq 0.5$. If $T_{b,o}$ is not given, I can't judge $\frac{T_w - T_{b,o}}{T_w - T_{b,i}} \geq 0.5$. Then, do I have to use only ΔT_{lmtd} instead of $T_w - \frac{1}{2}(T_{b,o} - T_{b,i})$?

Solve the problem and check if the simplified expression can be used or not. If it can not be used, re-solve the problem with the full expression.