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**Signature:** AP

Week 3
Intention
Goal: What do you want to achieve at the end of Week 4? To understand the ability to calculate through multiwall type questions with parallel and series circuit style
Desired Outcomes—learning outcomes I want to achieve in MECH 3228
Based on the content presented on May 31 <sup>st</sup> , discuss the topics that are the most interesting to you and what you want to achieve.  Understanding thermal resistance concepts and the applications and possibilities that could potentially be used in real life.
Self-Understanding—strengths that I can build on and development needs I can address to be successful in MECH 3228
Strengths: My strengths are notetaking and concentrating in class, which will both be very helpful when studying later for tests/assignments.  Development Needs: Time management outside of class and organizing it so everything is studied as need be.

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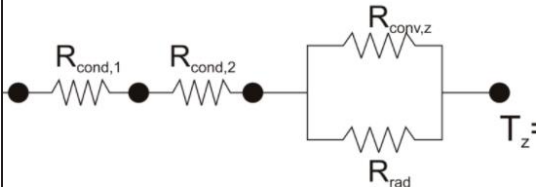
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## LECTURE CONTENT

Explain the thermal resistance concept for conduction, convection and radiation? Provide schematics.

Radiation and multilayers are treated the resistance as a parallel circuit while conduction and convection treated as a series circuit. The combination of the two create essentially a electric circuit which makes the process easier to solve. Like the schematic below:

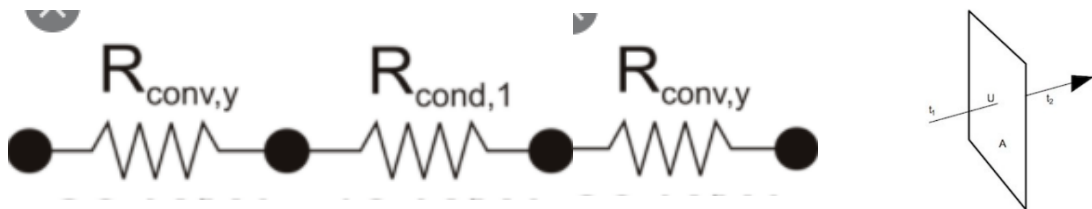


What happens to the resistance when the heat transfer coefficient approaches infinity?

The convection resistance becomes zero and the surface temperature approaches the bulk temperature.

What are the forms of heat transfer for a surface exposed to air? Draw a complete schematic that represents the resistances.

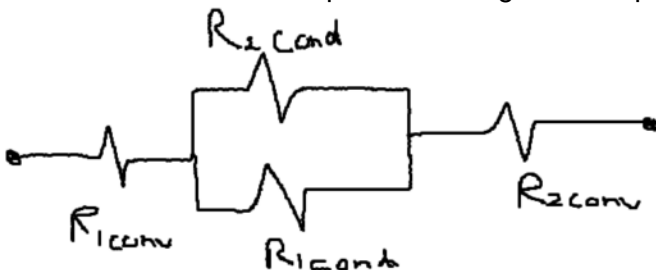
Surface exposed to air has heat transfer from convection and potentially radiation if information is given. If considering the surfaces has 2 sides making conduction happen as it travel through the surface and convection occurs as it exits the surface.



What is the thermal contact resistance? When do we encounter it? Is it significant?

Thermal contact resistance is the study of heat conduction between solid bodies, so it occurs when conduction occurs and it's significant to understand any structure with a large number of interfaces between solid surfaces.

Draw the combined series-parallel arrangement exposed to convection on the right side.



What are the necessary conditions to be able to apply the thermal resistance concept?

Heat transfer through the wall is 1D, since the interface are maintained at uniform temperature throughout. Heat transfer is steady since temperature are maintained constant with time. Thermal conductivities are constant and given at the specified temperature.