Notes

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Subject # Applied calculus

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Application of Derivatives and Integration in Engineering

Differential Calculus

Differential calculus is primarily concerned with instantaneous rates of change that is to find the slope of line or the plane tangent to some curve or surface at an instant - Noted that a straight line is a special type of surface.

Integral Calculus

On the other hand, is primarily concerned with areas and volumes - There are plenty of 2- Dimensional shapes that are hard to calculate their areas WITH OUT Integral Calculus -

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Likewise there are lot of 3-D ~~Areas~~ shapes that are used to calculate their volume without Integral calculus - Infact every single formula for either area or volume of any shape can be "derived" using integral calculus -

⇒ if by now, you still don't grasp how calculus is essential to engineering, I highly recommend learning it to see for yourself -

⇒ But to hit the point home, calculus is used to solve problems that are naturally random or very messy -

For eg we use differential eqn to describe complex pendulum systems - We also use them heavily in Quantum Mechanics in Physics -

And also use in ① Thermodynamics ② Waves ③ Mechanics ④ Kinematics etc.

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