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# APPLICATION OF DERIVATIVES AND INTEGRATION

## IN ENGINEERING :-

### RATES OF CHANGE :-

In this section we review the main application/ interpretation of derivatives from the previous chapter that we will be using in many of the application.

### CRITICAL POINTS :-

In this section we give the definition of critical points. Critical points will show up in most of the sections in this chapter, so it will be important to understand them and how to find them. we will work a number of example.

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## MINIMUM AND MAXIMUM VALUES:-

In this section we define absolute (or global) minimum and maximum values of a function and relative (or local) minimum and maximum values of a function. It is important to understand the difference b/w the two types of minimum and maximum.

## FINDING ABSOLUTE EXTREMA:-

In this section we discuss how to find the absolute minimum and maximum value of a function. In other words, we will be finding the largest and smallest values that a function will have.

## THE SHAPE OF A GRAPH PART-I

In this

section we will discuss what the first derivative of a function can tell us about the graph of a function.

The first derivative will allow us to identify the relative or local minimum and maximum values of a function and where a function will be increasing & decreasing.

## THE MEAN VALUE THEOREM:-

In this section

we will give Rolle's Theorem and the Mean Value Theorem. With the Mean Value Theorem we will prove a couple of very nice facts, one of which will be very useful in the next chapter.

## NEWTON'S METHOD :-

In this disucssSection we will discuss the newton method. Newton method is an application of derivative we allow us to approximate solution to an equation.

## INTEGRATION APPLICATIONS:-

- Area b/w Curves
- Distance, velocity acceleration
- Volume
- Average value of function.
- Work
- center of Mass
- Kinetic Energy, improper integration
- probability.