Name . Niamat ullah

Id = 16596

Subject = Applied calculus

Assingment = # 01

Suimitted to Mediam ahumila

Application of derivatives in Engineering
impoitant application in mathematics

- Rate of change of Quality.
- Increaseing and decreasing functions.
- Tangent and normal to a Cuve.
- Minimum and Miximum values.
- Newtha Methads.
- Linear Approximations.

Rate of Change of a Quality

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Greamal and Most important application of Divivahives or Example:

Cheack the rate of ~~Vetor~~ change of the Volume with respect to its decreasing sides.

From of derivatives used. (Page # 2)

Dy represent rate of change of volume
Dx represents change of sides of cube

* Increasing and Decreasing Function.

To find that given Function is increasing or decreasing or constant : say in graph we use derivatives if it is Functions which is continues [p,q] and then differentiate in the open interval [p,q] then.

* Maximum and Minimum

To calculate the height and lowest point of the function is used.

• x = a, if f(x) ≤ f(a) for every x in the domain, that f(x) has a absolute point a is the point of the maximum value of f.

• when x = a, if f(x) ≤ f(a) for every x in some open interval (p,q) then f(x) has Relative a Relative minimum.

• When $x = a$, if $(x) = F(a)$ every x in domain.

• When $x = a$, if $F(x) \geq F(a)$ for every x in $F(x)$ was a relative minmum value.

* Approrimtion of Findling Appiorimcle

To a find a very small change of variation of Quility. We can use dirrvalives to given the appromate value is represte by delta Δ.

Spose, change in the values of x, dx_1x the $dy/dx = \Delta x = x$

Since, the change in x, $dx \simeq x$ there fore

$dy \simeq y$

* Point of inglection:-

For continices Functions $F(x)$ if $F_2(x_0) = 0$

OR. $F^*(x_0)$ close not exist at point where $f'(x_0)$ does not exist at point and $F''(x)$ changes sign when passing and through $x = x_0$ than x_0 is called the point of function.

* Application of Integration (Page 4)

- Area b/w curves
- Volume
- Kinetic energy improve
- Arc length
- Distance, velocity acceleration
- Average volume of function
- Centre of mass
- Probability
- Surface area

* Area between Curves :-

We have seen now integration can be used to find area between a curve x-axis with very little change we can used find same areas b/w curves indeed integrated as the area b/w the curve and a second "curve" with equation y=0 Quit easy to understand.

* Centre of Mass.

Suppose a beam is 10 meters long and that there are three weight on the beam : a 10 Kilogram weight 3 meters from the left and, a 5 kilogram weight 6 meters from the left and a 5 Kilogram weight 6 meters.

Frome left and a 4 Kilogram weight [illegible] From the left and when smelar From the left and where should a placed so, that [illegible] beam From beam from 0 at the left can a length and location, dots, assigned Scale to the a lenote Locations on the beam a Simply as coordinates the weight are at $x=3$, $x=6$ and $x=8$, as

Suppose we begin with that ~~Falcrum~~ Formula is applied at.

* Arc Length:

Here, another geometric application of the integral find a length of a portion of a curve. As usual might approximate the length & turn the Approximation into compute an know arc length, that of a line Segment, if then we length of we the Segment.

is the distance b/w the Points $\sqrt{(x)_x^2 + (y_1 - y^0)^2}$ from the Pythagorean theoram as illustreled