
Welcome

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MEAN VALUE THEOREM

If f is a real continuous function on

[a, b] and differentiable in (a ,b) then there exist a point x€ (a, b) at which

$$f(b) - f(a) = (b-a) \cdot f'(x)$$

PROOF

Given that, f is real continuous function on [a, b] and differentiable in

(a ,b).

let g (x)=x

Then g is continuous on [a, b] and differentiable on (a ,b).

Therefore,

$g'(x) = 1$

$g(b) = b$

$g(a) = a$

Using this in the,

GENERALIZED MEAN VALUE THEOREM

" If f and g are continuous real functions on [a, b] which are differentiable in (a, b) at which

$[f(b) - f(a)]\, g'(x) = [g(b) - g(a)] \cdot f'(x)$ "

we get,

$[f(b) - f(a)] \cdot 1 = (b-a) f'(x)$

$f(b) - f(a) = (b - a) f'(x).$