Chapter 4 (Test 3) Test Prep

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Formulas/Theorems

From The Mean Value Theorem: 4.2

The mean value theorem:

$$f'(c) = \frac{f(b) - f(a)}{b - a}$$

or

$$m_{tan} = m_{sec}.$$

Note:-

If f(a) = f(b), then you can apply rolle's theorem and just set $f'(x) = 0$ to find c

Notes:

- If rolle's theorem can be applied, just set $f'(x) = 0$ to find c, remember you are finding all c in the ***open interval***, so if c does not obey this interval, it is not a solution

Indeterminate Forms from 4.4

- The ones we want
  - $\frac{0}{0}$
  - $\frac{\infty}{\infty}$
- The ones we dont want
  - $\infty - \infty$
  - 0^0
  - ∞^∞
  - 1^∞

Newton's Method

Formula:

$$x_{n+1} = n_n - \frac{f(x_n)}{f'(x_n)}.$$

Antiderivatives

Common Antiderivatives

Function	Particular antiderivative	Function	Particular antiderivative
$cf(x)$	$cF(x)$	$\sin x$	$-\cos x$
$f(x) + g(x)$	$F(x) + G(x)$	$\sec^2 x$	$\tan x$
$x^n \ (n \neq -1)$	$\frac{x^{n+1}}{n+1}$	$\sec x \tan x$	$\sec x$
$\frac{1}{x}$	$\ln \lvert x \rvert$	$\frac{1}{\sqrt{1-x^2}}$	$\sin^{-1} x$
e^x	e^x	$\frac{1}{1+x^2}$	$\tan^{-1} x$
b^x	$\frac{b^x}{\ln b}$	$\cosh x$	$\sinh x$
$\cos x$	$\sin x$	$\sinh x$	$\cosh x$