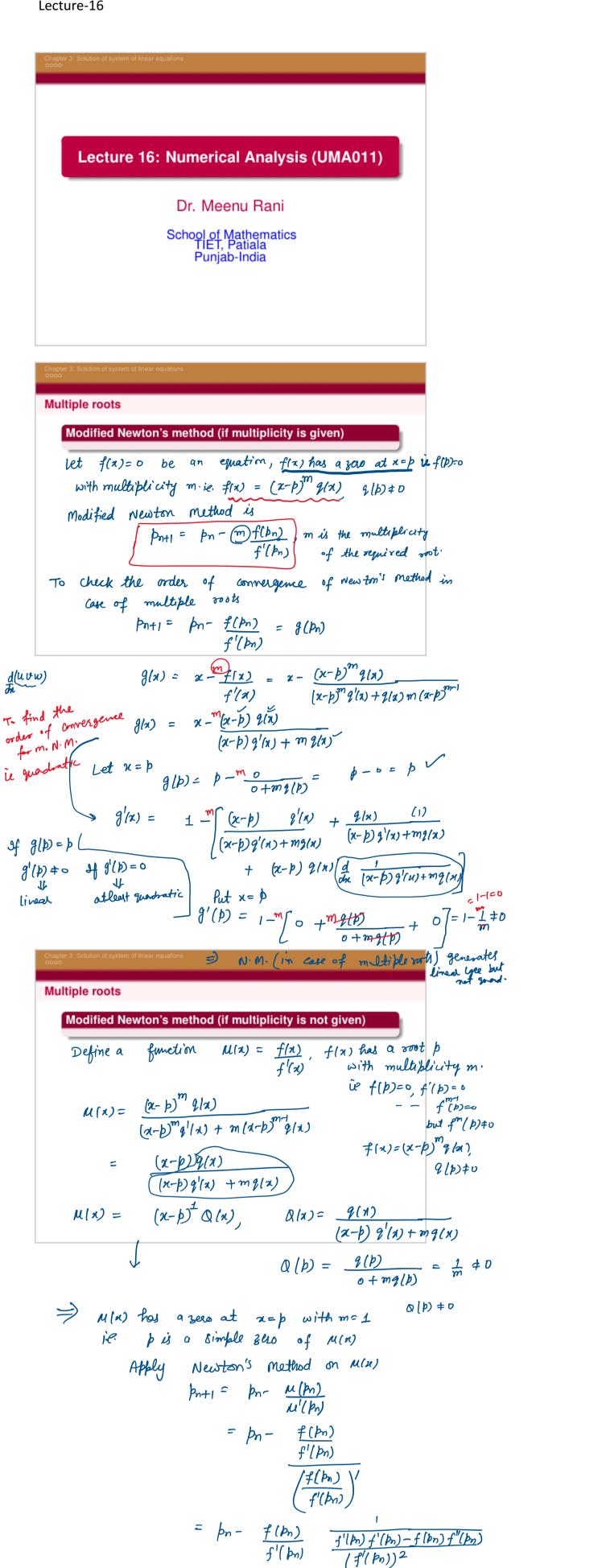
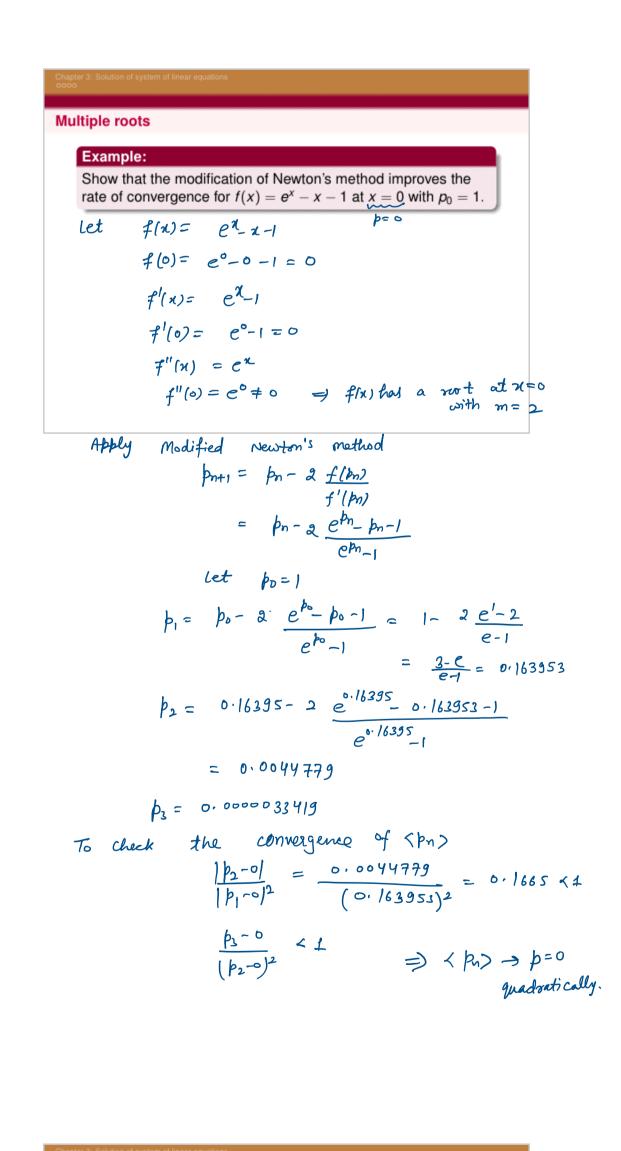
Wednesday, August 31, 2022





 $= p_n - \frac{f(p_n)}{f'(p_n)} \frac{[f'(p_n)]^2}{(f'(p_n))^2 - f(p_n)f''(p_n)}$

 $p_{n+1} = p_n - \underbrace{f(p_n)f'(p_n)}_{(f'(p_n))^2 - f(p_n)f''(p_n)} \rightarrow \underbrace{\text{Modified}}_{\text{Newton's method}}$



$g(n) = x - m \frac{f(n)}{f'(n)}, \quad f(n) = (x - b)^m g(n)$ g(b) = b g'(b) = 0Chapter 3: Solution of system of linear equations Multiple roots:Exercise: 1 Use Newton's method and the modified Newton's method

 $f(x) = (1-x)\sin(1-x) = 0$

the convergence is of second-order.

accurate to within 10^{-2} . Take initial approximation $x_0 = 0$. 2 Apply modified Newton's method with m = 2 and $x_0 = 0.8$ to the equation $f(x) = x^3 - x^2 - x + 1 = 0$, and verify that

Order of convergence of modified Newton's method:

Multiple roots

to find a solution of