UNIT-1 [NOTE: to keep 5 decimal places
Calci → Shift → Mode → 6:fix → Press 5]

⇒ Regular Falsi Method.

Steps: 1. If eqn is trignometric always keep calculator in radians.

To keep in Radian.

Calci steps: Step1: Shift → Mode → 4: Rad.

To solve Regular Falsi

Step1: write $f(x) =$ _____

Step2: check. $f(0), f(1), f(2)$... until you get the ⊕ ⊖.

Step3: After getting where the root lies check precisely where it lies (root)

Ex: if root lies between 0 & 1.
then check for 0.1, 0.2, 0.3 ....
where root lies.

If log is there in function
→ do not check $f(0)$ = it shows error
start from now $f(1)$ = for finding roots.

⇒ Newton Raphson

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

Step1: write $f(x) =$ _____

Step2: Find $f(x)$ & $f'(x)$

Step3: find where root lies.
Ex: $f(0)$ $f(1)$ ... till we get + or −

Step4: x_0 = which is near zero & then solve by formula

⇒. Taylor series.

$$y(x_0+h) = y_0 + (x-x_0)y' + \frac{(x-x_0)^2}{2!}y'' + \frac{(x-x_0)^3}{3!}y'''$$

⇒ Modified Eulers Method.

$$y_1^{(0)} = y_0 + hf(x_0, y_0)$$

$$y_1^{(1)} = y_0 + \frac{h}{2}[f(x_0, y_0) + f(x_1, y_1^{(0)})]$$

$$y_1^{(2)} = y_0 + \frac{h}{2}[f(x_0, y_0) + f(x_1, y_1^{(1)})]$$

$$y_1^{(3)} = y_0 + \frac{h}{2}[f(x_0, y_0) + f(x_1, y_1^{(2)})]$$

⇒ R.K Method.

$$y(x_0+h) = y_0 + \frac{1}{6}(k_1 + 2k_2 + 2k_3 + k_4)$$

$$k_1 = hf(x_0, y_0)$$

$$k_2 = hf(x_0 + \frac{h}{2}, y_0 + k_1/2)$$

$$k_3 = hf(x_0 + \frac{h}{2}, y_0 + k_2/2)$$

$$k_4 = hf(x_0 + h, y_0 + k_3)$$