Rolle's Theorem

$f(x)$ is defined in $[a,b]$

(i) $f(x)$ is continuous $[a,b]$

(ii) $f(x)$ is derivable in (a,b)

(iii) $f(a) = f(b)$

Then A real number $x \in (a,b)$

$$f'(x) = 0$$

As for example -

$$f(x) = x^2 - 5x + 6 \qquad \overset{a}{(2}, \overset{b}{3)}$$

Polynomial function therefore if is continuous in $(2,3)$

$$f'(x) = 2x - 5 \rightarrow (1)$$

$$f(a) = f(b)$$

$$f(2) = f(3)$$

$$(2)^2 - 5x^2 + 6 = (3)^2 - 5x^3 + 6$$

$$4 - 10 + 6 = 9 - 15 + 6$$

$$0 = 0$$

$$\boxed{f(2) = f(3)} \qquad x \in (2,3)$$

$$f'(x) = 0$$

$$2x - 5 = 0$$