

Answer on Question # 83135

We have given the function $f(x) = (x - 2)\log(x)$ in $[1, 2]$
Since $f(x)$ is continuous in the interval $[1, 2]$ and is differentiable in $(1, 2)$.
And we also have $f(1) = f(2)$, then by Rolle's theorem there exist a c in $(1, 2)$ such that $f'(c) = 0$
i.e we have $f'(x) = \frac{1}{x}(x - 2) + \log(x)$
So we have $f'(x) = \frac{(x-2)+x\log(x)}{x} = 0$
i.e $(x - 2) + x\log(x) = 0$ and since $f'(c) = 0$, *i.e* we have $(c - 2) + c\log(c) = 0$
This implies that equation $(x - 2) + x\log(x) = 0$ has a zero in $(1, 2)$.