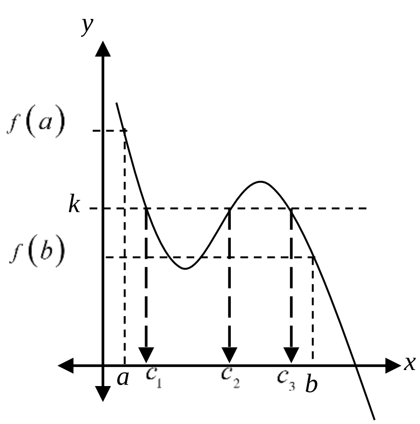
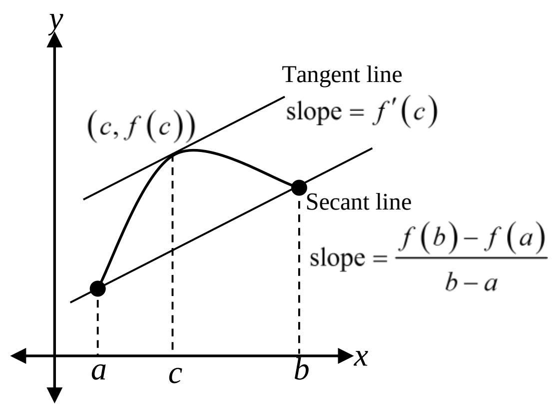
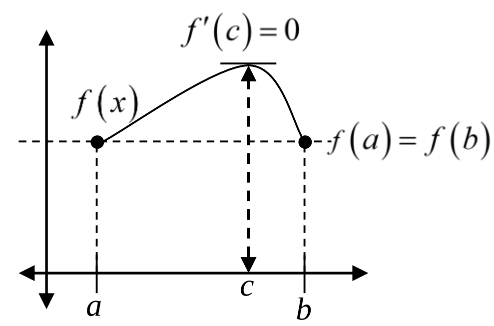
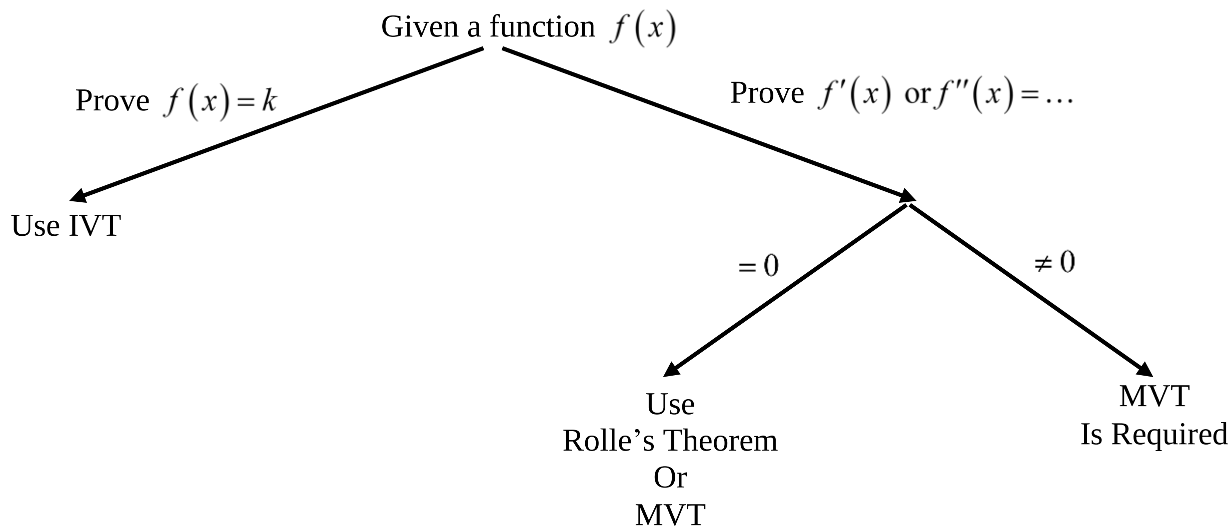
IVT	**MVT**	**Rolle's Theorem**
Used to show that $f(x)$ achieves a value of k	Used to show that $f'(x)$ achieves a given value (usually $\neq 0$)	Used to show that $f'(x)=0$ (and only $=0$)
Hypothesis	Hypothesis	Hypothesis
I. $f(x)$ is continuous on $[a,b]$ II. k is a value between $f(a)$ and $f(b)$	I. $f(x)$ is continuous on $[a,b]$ II. $f(x)$ is differentiable on (a,b)	I. $f(x)$ is continuous on $[a,b]$ II. $f(x)$ is differentiable on (a,b) III. $f(b)=f(a)$
Conclusion	Conclusion	Conclusion
By IVT, there exists a c in (a,b) such that $f(c)=k$.	By MVT, there exists a c in (a,b) such that $f'(c)=\dfrac{f(b)-f(a)}{b-a}$	By Rolle's Theorem, there exists a c in (a,b) such that $f'(c)=0$
		


Given a function $f(x)$
Prove $f(x)=k$
Use IVT
Prove $f'(x)$ or $f''(x)=\ldots$
$=0$
$\neq 0$
Use
Rolle's Theorem
Or
MVT
MVT
Is Required