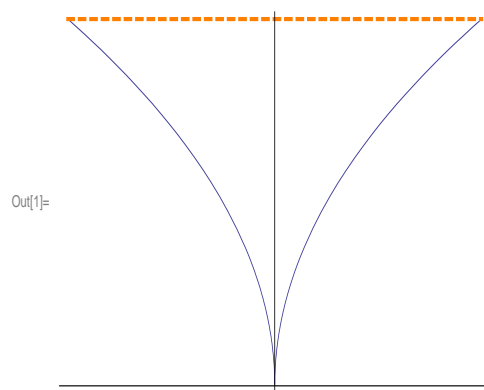


Caution The requirements of the Rolle's Theorem are necessary for the theorem to be true. Check out the graph below:



The dashed orange line in the graph is connecting the points $(-1, f(-1))$ and $(1, f(1))$. Clearly, $f(-1) = f(1)$ and f is continuous over the closed interval $[-1, 1]$ but there is NO point inside the interval $(-1, 1)$ at which you can draw a horizontal tangent line to this graph. Why did the Rolle's Theorem fail? Because f is not differentiable over the whole interval $(-1, 1)$, note that there is a "cusp" at the origin hence f fails to be differentiable there.