Answer to Question #84750 - Math – Calculus

Question:

Is the statement true or false?

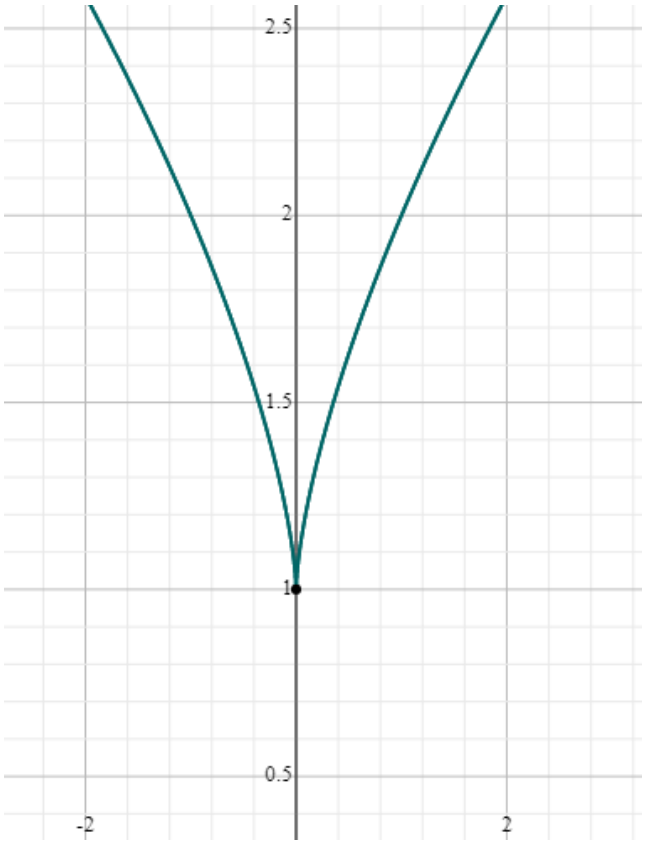
Give a short proof or a counter example in support of your answer.

Rolle's theorem is applicable for the function *f*, defined by $f(x)=1+x^{2/3}$ in the interval $[-1,1]$.

Solution:

The function $f(x)=1+x^{2/3}$ is continuous in the interval $[-1,1]$.

But it is not differentiable at *x* = 0 since any function is not continuous at a point where there is a sharp turn. Since the curve has a sharp turn at *x* = 0, the function $f(x)=1+x^{2/3}$ is not differentiable at *x* = 0.



Hence one of the conditions of Rolle's theorem is not satisfied.

Thus Rolle's theorem cannot be verified for this function $f(x)=1+x^{2/3}$.