

Answer to Question #91974 – Math – Calculus

L' Hopital's Rule. For the functions f and g which are differentiable on an open interval I except possibly at a point c contained in I , suppose that we have

$$\lim_{t \rightarrow c} f(t) = 0, \lim_{t \rightarrow c} g(t) = 0 \text{ or } \pm \infty \text{ and}$$

$g'(t) \neq 0$ for all t in I , then

$$\lim_{t \rightarrow a} \frac{f(t)}{g(t)} = \lim_{t \rightarrow a} \frac{f'(t)}{g'(t)} \dots\dots(1)$$

Given that $\lim_{x \rightarrow \infty+} 2325 x \cos x$.

The functions $f(x) = x$ and $g(x) = \cos x$ both are differentiable over \mathbb{R} ,

$$g'(t) = \frac{d}{dx}(\cos x)$$

$$= \sin x = 0 \text{ at } x = 0$$

Hence, it is failing to satisfy the condition $g'(t) \neq 0$ for all t in I of the L'Hopital rule.

Therefore, we cannot apply L' Hopital Rule.