

Let  $f$  be twice continuously differentiable on  $(0, +\infty)$  such that  $\lim_{x \rightarrow 0+} f'(x) = -\infty$  and  $\lim_{x \rightarrow 0+} f''(x) = +\infty$ . Show that

$$\lim_{x \rightarrow 0+} \frac{f(x)}{f'(x)} = 0.$$