Problem 1 (due on Monday, February 14)

Let $f:(0,\infty)\longrightarrow \mathbb R$ be a continuously differentiable function such that $\displaystyle \lim_{x\to\infty} (f(x)+2f'(x))=1$. Prove that $\displaystyle \lim_{x\to\infty}f'(x)=0$.

We received a solution from Ashton Keith. Ashton's ideas are similar to our second solution, but his solution lacks sufficient rigor. For detailed solution see the following link Solution.