Problem 5: A System of Equations over $\mathbb{Z}$

Show that the system of equations

$$\begin{cases} 2x^2 + 5y^2 = u^2 \\ 4x^2 + y^2 = v^2 \end{cases}$$

does not have any non-trivial integer solutions.

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted.

Posting Date 10/12/2019. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 5 pm on 10/26/2019.