

Werk

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Thus it suffices to show that $x_1 + bx_2 \equiv x_1 + (n+1)x_2 \not\equiv 0 \pmod{n^2 + 2n}$ for all $|x_i| \leq n-1$ except $x_1 = x_2 = 0$. But this follows immediately from the fact that

$$2 \leq |x_1 + (n+1)x_2| \leq n^2 + n - 2.$$

It would still be quite interesting to know if Theorem 1 can be improved for $n \geq 3$.

References

- [1] *G. H. Hardy and E. M. Wright*: An Introduction to the Theory of Numbers, London, (1960);
- [2] *W. Sierpiński*: Sur les décompositions de nombres rationnels in fractions primaires, *Mathesis* 65, (1956), 16–32.
- [3] *B. M. Steward and W. A. Webb*: Sums of fractions with bounded numerators, *Can. J. Math.* 18, (1966), 999–10003.
- [4] *W. A. Webb*: On the diophantine equation $k/n = a_1/x_1 + a_2/x_2 + a_3/x_3$, *Časopis Pěst. Mat.*, 101, (1976), 360–365.

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