- Can we find an integer solution to the equation $4x + 6y = 1$?
    - After some reflection, the answer is no: because the left-hand side is even, you can never get 1 on the right-hand side.
- Ok what about $4x + 6y = 2$?
    - Yes we can! For example, $x = 2, y = -1$ works.
    - Ok, is this the only solution? (Probably not.)
    - Can we find **all** the solutions???