ID 917

3. $\frac{1}{a} + \frac{a}{b} + \frac{1}{ab} = 1$

$\frac{a}{b} + \frac{1}{ab} = \frac{a-1}{a}$

$\frac{a^2+1}{ab} = \frac{a-1}{a}$

$a^2+1 = (a-1)b$

$\frac{a^2+1}{a-1} = b$

$\frac{a^2+1}{a-1}$ needs to be an integer!

$\frac{a^2+1}{a-1} + \frac{-2}{a-1} + \frac{2}{a-1}$

$\frac{a^2-1}{a-1} + \frac{2}{a-1}$

$\frac{(a+1)(a-1)}{a-1} + \frac{2}{a-1}$

$= a+1 + \frac{2}{a-1}$

$\frac{2}{a-1}$ needs to be an integer!

only when $a = 2$ or 3

$(2,5)(3,5)$ ⟶ $\frac{1}{3} + \frac{3}{5} + \frac{1}{15}$

$= \frac{5}{15} + \frac{9}{15} + \frac{1}{15}$

$\frac{1}{2} + \frac{2}{5} + \frac{1}{10} = 1$

$\frac{5}{10} + \frac{4}{10} + \frac{1}{10} = 1$

$(2,5)(3,5)$