$\therefore x^2 \neq 3y^2+2$ for this case

$x = 2K_1 \quad y = 2K_2+1 \quad x^2 = 4K_1^2 \cdot 3y^2+2 = 3(2K_2+1)^2+2 = 12K_2^2+12K_2+5$
$= 4(3K_2^2+3K_2+1)+1$

$\therefore x^2 \neq 3y^2+2$ for this case

$x = 2K_1+1 \quad y = 2K_2 \quad x^2 = 4K_1^2+4K_1+1 = \boxed{4(K_1^2+K_1)+1}$

$3y^2+2 = 12K_2^2+2 = 2(6K_2^2+1) = 2(2(3K_2^2)+1)$
$= \boxed{4(3K_2^2)+2}$

$\therefore x^2 \neq 3y^2+2$ for this case

$x = 2K_1+1 \quad y = 2K_2+1 \quad x^2 = 4K_1^2+4K_1+1 = \boxed{4(K_1^2+K_1)+1}$

$3y^2+2 = 3(2K_2+1)^2+2 = 12K_2^2+12K_2+5 = 4(3K_2^2+3K_2+1)+1$

- We will try showing that $\boxed{K_1^2+K_1 \neq 3(K_2^2+K_2)+1}$

By division algorithm, K_1 and K_2 can be $2p, 2p+1$ and $2q, 2q+1$ for some $p, q \in \mathbb{N}$.

$K_1 = 2p \quad K_2 = 2q \quad K_1^2+K_1 = 4p^2+2p = 2(2p^2+p) \quad 3(K_2^2+K)+1 = 3(4q^2+2q)+1$
$= 2(6q^2+3q)+1$

$\boxed{\therefore K_1^2+K_1 \neq 3(K_2^2+K_2)+1 \text{ for this case}}$

$K_1 = 2p \quad K_2 = 2q+1 \quad K_1^2+K_1 = 4p^2+2p = 2(2p^2+p)$

$3(K_2^2+K_2)+1 = 3(4q^2+4q+1+2q+1)+1 = 12q^2+18q+7 = 2(6q^2+9q+3)+1$

$\boxed{\therefore K_1^2+K_1 \neq 3(K_2^2+K_2)+1 \text{ for this case}}$

$K_1 = 2p+1 \quad K_2 = 2q \quad K_1^2+K_1 = 4p^2+4p+1+2p+1 = 2(2p^2+3p+1)$

$3(K_2^2+K_2)+1 = 3(4q^2+2q)+1 = 2(6q^2+3q)+1$

$\boxed{\therefore K_1^2+K_1 \neq 3(K_2^2+K_2)+1 \text{ for this case}}$

$2(2p^2+2p)+1$

$K_1 = 2p+1 \quad K_2 = 2q+1 \quad K_1^2+K_1 = 4p^2+4p+1 = 4(p^2+p)+1$

$3(K_2^2+K_2)+1 = 3(4q^2+4q+1+2q+1)+1 = 12q^2+18q+7$
$= 2(6q^2+9q+3)+1$