December 21st

There are four pairs of positive integers (x, y) such that $x^2 - y^2 = 225$

Find these pairs

Since $x^2 - y^2 = (x + y)(x - y)$

We look for factor pairs of 225.

225 = 15 x 15 (But that would mean y=0, so doesn't yield a solution)

225 = 45 x 5

x + y = 45

x – y = 5

Adding gives 2x = 50

Hence **x = 25 and y = 20**

225 = 25 x 9

x + y = 25

x – y = 9

Adding gives 2x = 34

Hence **x = 17 and y = 8**

225 = 225 x 1

x + y = 225

x – y = 1

Adding gives 2x = 26

Hence **x = 113 and y = 112**

225 = 75 x 3

x + y = 75

x – y = 3

Adding gives 2x = 78

Hence **x = 39 and y =36**