Let

$$\begin{aligned}
P_1(x) &= \exists y \cdot (x_1 x_2 = y_1 y_2) \wedge x \neq y \\
P_2(x) &= (\exists y \cdot (x_1 + x_2 = y_1 + y_2) \wedge x \neq y) \wedge (\forall y \cdot (x_1 + x_2 = y_1 + y_2) \Rightarrow P_1(y)) \\
P_3(x) &= \forall y \cdot ((x_1 x_2 = y_1 y_2) \wedge P_2(y)) \Rightarrow x = y \\
P_4(x) &= \forall y \cdot ((x_1 + x_2 = y_1 + y_2) \wedge P_3(y)) \Rightarrow x = y
\end{aligned}$$

Find (the unique) x such that

$$P_1(x) \wedge P_2(x) \wedge P_3(x) \wedge P_4(x)$$

Here all variables are quantified over *unordered* pairs of integers in the range [2, 99] (take $x_1 \leq x_2$ say).