

Problems From Novice (Level 2) Problem Solving

1. Find the number of integer solutions to the equation $y^2 - 6y + 2x^2 + 8x = 367$
2. How many non-negative integer solutions are there to $x + y + z = 30$ such that none of x, y, z is divisible by 3?
3. Find all integers n such that $\frac{n^2 + 5n - 2}{3n + 1}$ is an integer.
4. Let $ABCD$ be a quadrilateral with $BC \perp AB$ and $DA \perp AB$. Let AC and BD intersect at P . If $BC = 4$ and $AD = 6$, find the distance of point P from line AB .