

Here are some problems for Wednesday, 17 May, 2023. Aim to write up two of the following three problems.

1. Let $m, n, t \in \mathbb{R}$. Prove that If $m^2(n^2 + 5)$ is even, then m is even or n is odd.

2. Let $x, y \in \mathbb{R}$. Prove that if $x + y \geq 2$, then $x \geq 1$ or $y \geq 1$.

3. Let $n \in \mathbb{Z}$. Prove that n is even if and only if¹ $n^2 + 1$ is odd.

¹Remember that iff statements require proving the statement in both directions.