1. Let $S$ be the statement: “If Trump feels insecure he tweets something stupid.” and let $T$ be the contrapositive of $S$. What is $T$? Is $S \text{XOR} T$ true or false? Why?

2. Prove the Boolean distribution law: $P \land (Q \lor R) \iff (P \land Q) \lor (P \land R)$.

3. Prove that no three unit vectors $u, v, w \in \mathbb{R}^2$ are mutually perpendicular.

4. Prove that the number of ways to tile an $n \times 1$ rectangle with $1 \times 1$ squares and $2 \times 1$ rectangles is $f_{n+1}$, the $(n + 1)^{st}$ Fibonacci number.