## MATH 121A Prep: Proofs

1. Let  $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$ . Prove that for all positive integers  $n, A^n = \begin{bmatrix} 1 & n \\ 0 & 1 \end{bmatrix}$ 

- 2. Convert the following statements between words and mathematical notation.
  - (a) For all  $\vec{v}$  in V there exists unique  $\vec{u}$  in U and  $\vec{w}$  in W such that  $\vec{v} = \vec{u} + \vec{w}$ .
  - (b)  $\exists \vec{v} \in V \text{ such that } \forall \vec{w} \in W, f(\vec{v}, \vec{w}) = 0.$

3. Write the negation of the statements in Question 2.