MATH 450 Seminar in Proof

Not a sentence.

Prove that $f : A \to P(A)$ is not onto. Where $P(A)$ is the power set of A. Hint: consider the set $\{a \in A : a \notin f(a)\}$

from where to where?

Proof. Let us proceed by contradiction. Let f be onto. Then $f[A] = P(A)$. Let $B = \{a \in A : a \notin f(a)\}$. Thus $B \subset A$ and also $B \in P(A)$. Let a be a particular element in A. If $a \in B$ then $B \notin f(a)$ and if $a \in f(a)$ then $a \notin B$. This creates a contradiction as from our assumption since f is onto, $B \in f[A]$ but $B \notin f[A]$. So $f[A] \neq P(A)$. Thus f is not onto. □

I don't think you mean this because you don't mean to fix it. You mean for any a.

I'm not seeing how you got this from what you had.

Not sure how B would be an *element* of a subset of A.