For a subset to be a subspace it must satisfy closure axioms

so $S, T \in Y$ and $c \in \mathbb{R}$ then $S+T \in Y$ and $cS \in Y$

first for any S and T, ~~since~~ and for any X that $X \in U$ $S(X) \in W$ $T(x) \in W$

and W is a subspace therefore it is closed under addition

$S(x)+T(x) \in W$ therefore $S+T \in Y$

Second. for any scalar c, and any X that $X \in U$ $S(X) \in W$

and W is a subspace which is closed under scalar multiplication

that means $cS(x) \in W$ therefore $cS \in Y$

Since two axioms are satisfied Y is a subspace.