Definition. An element $a$ in a ring is an idempotent if $a^2 = a$.

A. Find all the idempotents in the ring $\mathbb{Z}_7$.

B. Find all the idempotents in the ring $\mathbb{Z}_{12}$.

C. Find all solutions of the equation $x^2 = x$ in the ring $\mathbb{Z}_{12}$. 