Over a UFD

Proposition 1. *Let R be a GCD domain and $p(x) \in R[x]$ primitive. Then $p(x)$ can be written as a product of irreducibles in $R[x]$ in essentially one way (up to a rearrangement and mutiplication by units).*

Proof. (type this) $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad$ $\square$

Corollary 2. *If R is a UFD, then $R[x]$ is a UFD.*

Proof. (type this) $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad$ $\square$