Worksheet 8: Prime ideals, integral domains

1. Show that if R is an integral domain, then $R[x]$ is also an integral domain.

2. Cancellation works in integral domains. That is, if R is an integral domain with $a, b, c \in R$, and $ac = bc$, then $a = b$. Why is this true in integral domains? Can you think of an example in a ring that's not an integral domain where cancellation doesn't work?

3. Why is any subring of an integral domain an integral domain?

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