18.702 Quiz 2

Take this quiz any time on Friday, March 12.

As before:
You are required to do the quiz alone. You may consult the text, but no other source.

The rule $\varphi(f(x)) = f(1)$ defines a homomorphism $\varphi : \mathbb{Z}[x] \longrightarrow \mathbb{Z}$ from the ring $\mathbb{Z}[x]$ of polynomials with integer coefficients to the ring of integers.

(a) What is the kernel of φ?

(b) Explain what the Correspondence Theorem says about ideals of $\mathbb{Z}[x]$, when it is applied to this homomorphism.