1. In \( \mathbb{Z}[x] \), the ideal \((2x^2 - 4, 4x - 5)\) is not principal. However, this ideal is principal in \( R[x] \). What is it generated by?

2. Let \( \varphi : R \to S \) be a ring homomorphism. Show that the image of \( \varphi \), denoted by \( \varphi(R) \) is a subring of \( S \).