Math 464 Assignment 6: Due Monday, February 25

Do the following exercises from Chapter 11 of Artin:
6.9,7.3,7.8,7.9,8.1,8.2,8.3,8.5,8.7

1)Show that the ideal $\langle x^2 + y \rangle \subset \mathbb{Q}[x, y]$ is prime but not maximal.

2)Compute the order of the ring $\mathbb{Z}[\sqrt{-13}]/\langle 5 \rangle$.

3)Prove Proposition 8.3.c. Is this statement true over an arbitrary ring? Give a proof or counterexample.

4)Let $V = \{(0, 1), (1, 0), (1, 1)\} \subset \mathbb{Q}^2$ and let $I \subset \mathbb{Q}[x, y]$ be the ideal vanishing on V. Show that I is not prime.