Math 103B Practice Exercises

Spring 2000, Imre Tuba

True or false questions:

1. The 3-dimensional cube has an Euler path.
2. The 4-dimensional cube has an Euler path.
3. $U(15) \cong \mathbb{Z}_4 \oplus \mathbb{Z}_2$.
4. $U(24) \cong \mathbb{Z}_2 \oplus \mathbb{Z}_4$.
5. $\mathbb{Z}_6 \oplus \mathbb{Z}_4 \cong \mathbb{Z}_4 \oplus \mathbb{Z}_3 \oplus \mathbb{Z}_2$.
6. If F is a field, then (0) is a prime ideal in F.
7. If I and J are ideals in a ring R, then $IJ = \{ij \mid i \in I, j \in J\}$ is also an ideal.
8. Let R, I, and J be as in the previous problem. Then $IJ \subseteq I \cap J$.
9. Let R be a commutative ring and I an ideal of R. I is prime if and only if R/I is an integral domain.
10. Let I be an ideal of the ring R. I is a maximal ideal if and only if R/I is a field.