One goal for this course is for you to develop your skill in effectively communicating mathematics. With this in mind, you should clearly write up your solutions. Solutions with little or no justification will receive little or no credit.

(1) Carefully read through section 16.

(2) Prove that an ideal $M$ in a commutative ring with unity $R$ is maximal if and only if the ring $R/M$ is a field.

(3) We have been considering an analogy between the ring of integers $\mathbb{Z}$ and the ring of polynomial functions with rational coefficients $\mathbb{Q}[x]$. It was suggested that there should be a way to construct some ring analogous to the rings $\mathbb{Z}_p$, the integers modulo $p$, where $p$ is a prime element in $\mathbb{Z}$. Try to figure out how to do this.

(4) On pages 255-258 do problems 8, 9, 10 and 26.

(5) On pages 269-273 do problems 6, 8, 10, 16.

The following is not due until Tuesday, November 20, the day of the second midterm exam:

(6) On pages 269-273 do problems 34, 37, and 41.

(7) On pages 287-291 do problems 11, 42, 44 and 56.

(8) On pages 300-303 do problems 11, 18 and 42.