Home Work 4 (Quiz on Monday April 20th)

Section 58 Exercises 1, 2, 6, 7
Section 59 Exercises 1, 3
Section 60 Exercises 1, 2, 5
Section 70 Exercises 1, 3
Section 71 Exercises 2, 3

Home Work 3 (Quiz on Monday March 23rd)

Section 51 Exercises 1, 2, 3
Section 52 Exercises 2, 3, 4, 5
Section 53 Exercises 1, 3, 4, 6
Section 54 Exercises 4, 5, 8
Section 55 Exercises 1, 2,

Home Work 2 Chapter 2 (Quiz on February 17th)

Section 43 Exercises 1, 2, 4
Section 44 Exercises 1, 2, 3a
Section 46 Exercises 1, 3, 4
Section 47 Exercise 1
Section 48 Exercises 1, 2, 4, 6, 8.

Home Work 1 (Quiz on January 27th)

Section 32 Exercise 3
Section 33 Exercises 2a, 7
Section 34 Exercise 3
Section 35 Exercises 1, 4
Section 38 Exercises 4, 8, 9a.

EXTRA CREDIT:

Credit for *-problems will be given to first 5 persons who will give a correct solution at the board in my office. Then the problem will be removed from the list.

Problem 1*[# of claims left - 2](3pts) Show that every regular Lindelöf space is normal.

Problem 2*[# of claims left - 4](3pts) Show that if $X$ is completely regular and noncompact, then its Stone-Čech compactification is not metraizable.

Problem 3*[# of claims left - 5](4pts) Show that if $I^\omega$ is an image of $I$ under a continuous surjective map.

Problem 4*[# of claims left - 4](2pts) Show that any cheese sandwich can be cut into two equal (same amount of bread and cheese) sandwiches by one stroke of knife.

Problem 5*[# of claims left -4](3pts) Show that if $A = (a_{ij})$ is a nonsingular 3 by 3 matrix with $a_{ij} \in \mathbb{N}$, then $A$ has a positive real eigenvalue.

Problem 6*[# of claims left - 1](3pts) Let $A$ and $B$ be subset of a topological group. If $A$ is closed and $B$ is compact, show that $A \cdot B$ is closed.

Problem 7*[# of claims left - 4](3pts) If $f : S^n \to S^n$ is nulhomotopic, then $f$ has a fixed point and $f$ maps some point $x$ to its antipode $-x$.

Problem 99* Suppose that function $f$ satisfies the following condition: for every $x \in \mathbf{R}$ there is $k \in \mathbf{N}$ such that $f^{(k)}(x) = 0$.

(A)[# of claims left 4](3pts) Prove that there is an interval $[a, b]$ on which $f$ is a polynomial.

(B)[# of claims left 4](10pts) Is $f$ a polynomial?