MATE 6540 assignment 4

13. Let X be a separated space. Show that X is locally compact if and only if for each $x \in X$ and each open neighbourhood U of x, there is an open neighbourhood V of x such that $\overline{V} \subset U$ and $\overline{V}$ is compact.

14. Show that the compactness assumption in Theorem 6.1.13 is essential.

15. Exercise 2 of Chapter VI, p. 133 in Dixmier.

16. Exercise 3 of Chapter VI, p. 133 in Dixmier.

Points: 6 + 6 + 12 + 12