Erratum

An analogue of Hoffman-Wermer theorem for a real function algebra by S. H. KULKARNI AND N. SRINIVASAN *Indian J. Pure Appl. Math.* **19** (2) 1988, 154–66.

Theorem 3.7 reads as follows :—

Let X be a compact Hausdorff space and A a uniformly closed real subalgebra of $C(X)$, which contains real constants and which separates the points of X. If Re A is uniformly closed in $C(X)$, then there exists a closed subset Z of X, such that $A = \{f \in C(X) : f \mid Z \text{ is real}\}$.

The above theorem is incorrect as it stands. Counter-example : Let $X = [0, 1]$.

$$A = \{f \in C(X) : f(1 - t) = \overline{f(t)} \text{ for all } t \text{ in } X\}.$$

Then Re A is uniformly closed, but, for no closed subset Z of X, the above conclusion holds.

The 'Proof' of the above theorem breaks down at the following point : In the course of the proof, a compact Hausdorff space $\tilde{X}$, an involutory homeomorphism $\tilde{\tau}$ on $\tilde{X}$ and an algebra $\tilde{A}$ have been defined. Then it is claimed that $\tilde{A}$ is a real function algebra on $(\tilde{X}, \tilde{\tau})$. This claim is incorrect because $\tilde{A}$ may not separate the points of $\tilde{X}$.

However, this defect can be rectified by adding the following hypothesis :

For $x \neq y$ in X there exists f in A, such that $f(x) \neq \overline{f(y)}$.

(Note that this hypothesis is satisfied, if Re A separates the points of X). With this additional hypothesis, $\tilde{A}$ separates the points of $\tilde{X}$ and the proof remains valid. As a conclusion, we do have—

$$A = \{f \in C(X) : f \mid Z \text{ is real}\}.$$

In particular, this implies that

$$\text{Re } A = C_R(X) \subset A.$$

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