Hints for solving the exercises in Chapter 15

Hints to Exercise 15.3 The statement $(*)$ follows from the fact that the function T_{2n+1} is odd. The identity $s_n(0) = 1$ follows with de L' Hospital's rule, and the identity $\max_{0 \le t \le 1} |s_n(t)| \sqrt{t} = \mathcal{O}(n^{-1})$ for $n \to \infty$ can be verified directly. The last statement follows with Remark 15.29 on possible generalizations of the alternation theorem.

Hints to Exercise 15.4 The property $s_n \in \Pi_n$ can be obtained by consideration of the number $T_{n+1}(1)$. The other results can be obtained as similar results in Exercise 15.3.

Hints to Exercise 15.5 This is an immediate consequence of the alternation theorem.