Problem 1. Strikwerda, Exercise 5.2.1.

Problem 2. Strikwerda, Exercise 5.2.3. In addition, plot the phase velocity $\alpha(\theta)$ versus $\theta \in [-\pi, \pi]$ for the five cases $a\lambda = 0, 0.5, 1, 2, 3$.

Problem 3. Strikwerda, Exercise 5.3.2. Calculate also the group velocity $\gamma_-(\theta)$ of the parasitic mode.

Problem 4. Strikwerda, Exercise 5.3.3. In addition, plot the group velocity $\gamma(\theta)$ versus $\theta \in [-\pi, \pi]$ for the five cases $a\lambda = 0, 0.5, 1, 2, 3$.

Problem 5. Exercise 5.3.7. However, use $h = 1/40$ rather than $h = 1/20$. 