1. From the textbook: 4, 6, 7, 8, 11 in 17.4; 4, 5, 14 in 18.1; 1, 2, 4 in 18.2

2. Let $\chi_{\mathbb{Q}\cap I}$ be the characteristic function of the rationals in the unit interval, i.e., $\chi_{\mathbb{Q}\cap I} : \mathbb{R} \to \mathbb{R}$ such that $\chi_{\mathbb{Q}\cap I}(x) = 1$ if x is rational and $0 \leq x \leq 1$ and $\chi_{\mathbb{Q}\cap I}(x) = 0$ otherwise. Is $\chi_{\mathbb{Q}\cap I}$ Riemann-integrable, i.e., integrable in the sense of Chapter 18?

3. Let $f : \mathbb{R} \to \mathbb{R}$ defined by $f(\frac{p}{q}) = 1/q$ if $0 \leq p \leq q$ are coprime integers and $f(x) = 0$ if x is irrational or not in the unit interval $[0, 1]$. Determine the set of discontinuities of f. Is f Riemann-integrable, i.e., integrable in the sense of Chapter 18?