1. Boyce and DiPrima, Section 3.2, #13, #14, #16.

2. Boyce and DiPrima, Section 3.2, #29, #36, #38.

3. Boyce and DiPrima, Section 3.4, #33, #34.

4. Boyce and DiPrima, Section 3.4, #37, #39, Section 3.5, #33.

5. Boyce and DiPrima, Section 3.5, #36, and do for \( y'' + 2y' = 4\sin 2t \).

6 (Extra credits). (a) Boyce and DiPrima, Section 3.3, #33.
   (b) If
   \[
   y_1'' + q_1(t)y_1 = 0 \quad \text{and} \quad y_2'' + q_2(t)y_2 = 0
   \]
   and if \( q_1, q_2 \) are continuous and \( q_1(t) \geq q_2(t) \), then \( y_1 \) vanishes at least once between any two zeros of \( y_2 \), unless \( q_1(t) \equiv q_2(t) \) and \( y_1 \) is a constant multiple of \( y_2 \).