(1) Read sections 7.7 - 7.9, 7.11. If you are interested in differential equations you are encouraged to read 7.6 and 7.10 as well.

(2) Ungraded problems: 7.7.7, 7.7.9, 7.8.5, 7.9.1, 7.11.4.

(3) Consider the differential equation $\mathcal{L}y = 0$ where $\mathcal{L}$ is the linear first-order differential operator $\mathcal{L} = \frac{d^n}{dx^n} + a_{n-1} \frac{d^{n-1}}{dx^{n-1}} + \ldots + a_1 \frac{d}{dx} + a_0$. Denote the set of solutions within the space of complex functions $y(x)$ on $\mathbb{R}$ with $n$ continuous derivatives by $V$; $V$ is a $n$-dimensional space. Compute the Jordan form of $D|_V$ where $D$ is the differentiation operator $\frac{d}{dx}$. It may be helpful to think of $\mathcal{L}$ as $p(D)$ where $p(z) = z^n + a_{n-1}z^{n-1} + \ldots + a_0$. 