Mate 4031 practice problems

Lacking any further indication, mere mention of a section means: "solve all syllabus problems from this section".

§1.1: 1(d), 7, 9.
§1.2: 3, 5, 7, 10, 12.
§1.3: 12, 15, 17, 26, 29, 33.
§1.5: 2, 5, 7, 9.
§2.1: 5, 7, 10.
§2.2: 5, 6, 9, 13, 18.

For 27/9
§3.1: 1–8, 10, 12.

For 7/10
§1.4: (which I omitted above) all problems from syllabus.
§3.2: 3(b-d-e-f-g), 5, 10 (choose three), 11, 13, 18, 19. For pb 5, note that in the notation of the text, P_4 is the set of polynomials of degree less than four.

For 14/10
§3.3: 1, 5, 7, 10 (plot), 11 (take the number of vectors to be four), 16, 17. For 16-17: let $n = 4$. For 7, use the definition, not the Wronskian criterion (which we did not cover).

Extra: on $(-\infty, \infty)$, let $f(x) = \sqrt{2}$, $g(x) = \cos x$, $h(x) = \sin x$. Show that $f(x) - g(x) - h(x) = 0$ for infinitely many values of x, yet f, g, h are linearly independent.

For 25/10
§3.4.