MATH20602 – Numerical Analysis

The exam was not more difficult than previous ones, but it differed in design. In each of the first three parts, two questions were closely related to material from previous exams, while the other two questions were different. Even if the new type of questions were objectively easier, they seemed to have caused some problems for students who overly relied on past papers for preparation.

In Part 1, students were asked to apply Horner’s Rule in the context of Newton Interpolation. It turns out that Horner’s method is best applied to the Newton form of the interpolation polynomial: by simplifying the polynomial and then applying Horner’s rule to the simplified polynomial, much of the benefit of this rule gets lost as we have the added cost of rearranging the polynomial first.

In Part 3 c), students were asked to show convergence of Jacobi’s method by bounding the eigenvalues of the iteration matrix using Gershgorin’s theorem. Rather than solving the problem that was asked, a large number of students embarked on the much more difficult problem of actually computing the eigenvalues, which was not asked! Gershgorin’s theorem was treated in class, but it did not feature in previous exams.