

There were 93 scripts in total. As usual, marks were out of 100; before scaling (and which I will not be told about) the highest and lowest marks were 98 and 17 respectively. The median mark was 66; the mean was 65.6 with a standard deviation of 15.0.

In the comments below, when I write “many students...” usually what happened is that I gave partial marks due to the more-or-less subtle error described.

- 1a(i): “Bijective” is a necessary axiom. As an example, consider $\mathbb{Q}(x_i \mid i \in \mathbb{N})$: that is, \mathbb{Q} adjoin a countable collection of independent transcendentals.
- 1a(iii): The proof simplifies if we recall that $\text{Aut}(L/K)$ is a subset of $\text{Aut}(L)$.
- 1b: Before dividing both sides of an equation by a number α , we must check that α is non-zero.
- 1e(ii): Many students wrote a version of “An element $\alpha \in L$ is *algebraic* over K if the degree $[K(\alpha) : K]$ is finite.” This was said in class but it is not the definition (according to Samir!). Anyway it still received full marks.
- 1g(ii): Many students wrote a version of “Let $\alpha_1, \dots, \alpha_n$ be the roots of f , taken with multiplicity. Then $L = K(\alpha_1, \dots, \alpha_n)$ is the splitting field of f .” This is morally correct but mathematically wrong.
- 1h: Most students forgot the hypothesis that L/K must be an algebraic extension. (For example, consider $\mathbb{Q}(x)$.)
- 2b: Starting the proof by asserting that $[\mathbb{Q}(\alpha) : \mathbb{Q}] = 3$ is circular.
- 2e: There is a computation-free proof.
- 3e: Many students found this question difficult.
- 4a: Several students wrote some version of “Since $5 = a^2 + b^2D + 2ab\sqrt{D}$, by equating coefficients we have $2ab = 0$.” This does not make sense, as \sqrt{D} is not a variable. Instead we need to appeal to the fact that 1 and \sqrt{D} are linearly independent (when thought of as vectors in $\mathbb{Q}(\sqrt{D})/\mathbb{Q}$).
- 4c: Many students wrote some version of “Clearly $\sqrt{5}$ does not lie in K .” However, a proof is needed; there is a proof which does not require any computation.
- 4d: Many students found this question difficult.
- 5d: Only a few students attempted this question.