

Feedback on the 2011 MATH33001 Exam

A1 Quite well done but a common mistake was to formalize ‘Everyone who loves football loves Spain’ as

$$\forall w_1 F(w_1) \rightarrow \forall w_1 S(w_1),$$

where $F(x_1)$ stands for ‘ x_1 loves football’ and $S(x_1)$ stands for ‘ x_1 loves Spain’, whereas it should be

$$\forall w_1 (F(x_1) \rightarrow S(x_1)).$$

In other words to identify ‘Everyone who loves football loves Spain’ with ‘If everyone loves football then everyone loves Spain’, which clearly is incorrect.

A2 Quite well done though not many right answers to the last part. A common mistake (which I didn’t penalize though) was to give $\theta(n, m)$ etc. whereas $\theta(x_1, x_2)$ etc. were asked for. Strangely in a number of cases students wrote a sentence not even mentioning the free variables x_1, x_2 for $\theta_1(x_1, x_2)$ (and then perversely a formula involving x_1 for the sentence ϕ required in the last part!). For these $\theta_1(x_1, x_2)$ I wanted bona fide formulae so marks were lost for missing/extraneous brackets.

A3 Lots of wrong definitions of a ‘formal proof’, in particular students omitted to mention that the Γ_i must be finite. Strangely Γ and θ often appeared in the definition, refugees one supposes from the definition of $\Gamma \vdash \theta$.

Generally the required formal proof was well done.

A4 Generally well done.

B5 I was pleasantly surprised how well this question was answered, in general.

B6 These were easy marks for students who could do proofs. Students who couldn’t though scored badly because it’s hard to give many marks for a proof that’s patently wrong (the ‘charity marks’ for simply having some idea what a formal proof should look like had already been dispensed freely in question A3).

B7 Very few students tried this and those only attempted the definition (almost always incorrectly, a particularly frequent error was to make no mention of ‘normal’ in the attempt). It’s rather amusing to relate that the referees for this paper thought the last part was too easy – apparently you students weren’t of like mind!

Feedback on the 2011 MATH43001/63001 Exam

For comments on questions A1, A4,A5 see the comments on the identical questions A2, A4, B5 on the MATH33001 exam.

A2 Well done, almost everyone got this right.

A3 Well done in general.

B6 I'd intended that students would prove the first part by induction on $|\phi|$. However almost no one did that explicitly, instead the (correct) answers essentially treated the induction as too obvious to need any sort of a proof! Next time I'll know to say 'prove by induction . . . '!

B7 Despite being given the rules a number of students invented new equality rules of their own! Writing out the proof in full was of course quite laborious so I was happy for students to say 'and so on' at the point for example where there were 4 successive instances of $\forall O$.

B8 Few students attempted this and to my surprise most of them didn't even know what the Compactness Theorem says. No one gave a correct answer to the second part though there were some worthy attempts which still scored quite well.