

MATH1025 Homework 2 Feedback

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The most common errors for this homework were omitting to note where the inductive hypothesis is used and using imprecise linking words. This is noted in particular in a few examples.

Question 2. There are a few recurring errors amongst the induction questions in this homework, but overall most got the structure of an inductive proof correct, and need to be careful with a few small but important points.

1. This is not a rigorous proof. Try to rewrite your solution so that each step follows from the next and the justification is clear. Then check your work against the solutions.
2. There is a difference between ‘so that’ and ‘such that’. ‘So that’ signifies an implication, while ‘such that’ gives a qualification. It is good that you are using linking words, but make sure they make sense in context. You can usually interchange ‘so that’ with ‘i.e.’ and ‘thus’, while ‘such that’ cannot be replaced by these words.
3. Note that here the induction starts from ‘0’ not ‘1’! Always be careful where your base case should start from.

Question 4. Some had problems rigorously writing out a justification for this question. However, all noticed that the base case should be when $n = 8$, which is good.

1. You cannot use arguments such as ‘ x grows faster than y ’ or ‘ x is much greater than y in the long run’ in a rigorous argument. This is good for intuitively understanding how the inequality works, but then you need to justify why this is true. The best way would be to estimate one of the two by the other in some way, eg $x^2 \geq x$ for $x \in \mathbb{N}$.
2. Try to rewrite your solution in a more rigorous way, where each step follows from the next and the justification is clearly written out in ‘sentences’. Then check your work against the solutions.

Question 6. Most struggled with writing out a rigorous argument, so would benefit from trying again (taking the comments below and on the script into account) and then checking their answer against the solutions.

1. This is not entirely rigorous. Rewrite and check against solutions.
2. Where did you assume that the figure is convex?