

CS1231S Assignment #2
AY2025/26 Semester 1
Deadline: Monday, 3 November 2025, 1:00pm
TEMPLATE FOR SUBMISSION

INSTRUCTIONS.

- Read the instructions on the question paper.
- Rename this file to Axxxxxxx.pdf (your Student Number) before submitting to Canvas.
- Check that your submitted file is complete (no missing pages, not a blank file, etc.)

Q0. (2 marks) Full name:

Tutorial group number (eg: T02A):

Q1. (Total: 8 marks)

(a) (2 marks) Is the statement true or false?

(b) (3 marks) Is f a bijection?

Q1.

(c) (3 marks) Is g a bijection?

Grader's comments:

Q2. (6 marks) Using mathematical induction, prove that $15 \mid 2^{4n} + 31^n - 2$ for all positive integers n .

Grader's comments:

Q3. (6 marks) Using mathematical induction, prove that $A^* = S$.

Grader's comments:

Q4. (Total: 8 marks)

(a) (5 marks) Is that statement " T is countably infinite" true or false?

Grader's comments:

Q4.

(b) (3 marks) Is that statement " $T \setminus R$ is countably infinite" true or false?

Grader's comments:

Q5. (Total: 10 marks)

(a) (2 marks)

(i)

(ii)

(b) (4 marks)

(i)

(ii)

(iii)

(iv)

(c) (4 marks)



Grader's comments: