

Homework – Week 1b

i) Are the following arguments valid or invalid?

1. John is a student
If John is a student, then he is a human
John is a human
2. If she is guilty, she will go to jail
She will not go to jail
She is not guilty
3. It's not the case that it's not raining
It's raining
4. If the world is perfect, then God exists
The world is not perfect
God does not exist
5. If I can cook, then I can cycle
I can't cycle
I can't cook
6. I have ordered either fish or meat
I have not ordered fish
I have ordered meat
7. If I can prove the statement, the statement is true
The statement is true
I can prove the statement
8. It's not the case that he is guilty
He is innocent
9. If the earth is flat, I am an elephant
The earth is not flat
I am not an elephant

10. I am not lying
I am telling the truth

11. If the earth is flat, I am an elephant
The earth is flat
I am an elephant

12. If the weather is nice, we'll have our class outdoors
We're having our class indoors
The weather is not nice

13. If I prove that there is life in space, then it is true
There is life in space
I have a proof of it

ii) Translate the following natural language sentences into the formal language of propositional logic.

1. Mary and Bill like Chinese food.

2. Mary likes Chinese food, but Bill doesn't.

3. This engine is not noisy, but it does use a lot of energy.

4. If you do not know how to spend money, you are not rich.

5. Life is a misery if you do not get more than you deserve.

6. Kindness is in our power, but fondness is not.

7. It is not the case that Cain is guilty and Abel is not.

8. If Elizabeth did not sign this letter, then her assistant did.

9. A fetus isn't a person only if it doesn't have a right to life.

10. This has not been written with a pen of a pencil.

11. John is not only stupid but nasty too.

12. Johnny wants both a train and a bicycle from Santa Claus, but he will get neither.

13. It is not the case that Guy comes, if Peter or Harry comes.