



Logic, Information flow and Argumentation

Homework exercises, Week 6, part a (due Friday 16 March).

1. Using the diagrammatic method presented in class, decide whether the following syllogisms are valid or not (consult the lecture slides for review of the method).

(a)
$$\frac{\text{All students are poor} \\ \text{All poor people are hungry}}{\text{All students are hungry}}$$

(b)
$$\frac{\text{All students are poor} \\ \text{All students are clever}}{\text{All clever people are poor}}$$

(c)
$$\frac{\text{All students are clever} \\ \text{All teachers are clever}}{\text{All students are teachers}}$$

(d)
$$\frac{\text{All easy things are fun} \\ \text{Some logic exercises are easy}}{\text{Some logic exercises are fun}}$$

(e)
$$\frac{\text{No woman has been president} \\ \text{All presidents have lived in the White House}}{\text{No woman has lived in the White House}}$$

(f)
$$\frac{\text{Some meals are tasty} \\ \text{No meal is a drink}}{\text{Some drinks are not tasty}}$$

2. Now do the same, but these are harder.

- (a)
$$\frac{\begin{array}{l} \text{No animals are plants} \\ \text{No sheep are plants} \end{array}}{\text{All animals are sheep}}$$
- (b)
$$\frac{\begin{array}{l} \text{No student is clever} \\ \text{Some clever people are not rich} \end{array}}{\text{Some rich person is not a student}}$$
- (c)
$$\frac{\begin{array}{l} \text{No human is a monster} \\ \text{All animals are monsters} \end{array}}{\text{No human is an animal}}$$
- (d)
$$\frac{\begin{array}{l} \text{All numbers are green} \\ \text{Some green things are not salty} \end{array}}{\text{Some numbers are not salty}}$$
- (e)
$$\frac{\begin{array}{l} \text{Some shoes are not socks} \\ \text{All shoes are not brown} \end{array}}{\text{No brown thing is a sock}}$$
- (f)
$$\frac{\begin{array}{l} \text{Some computers are not laptops} \\ \text{All laptops are portable} \end{array}}{\text{Some Computers are not portable}}$$