

Tutorial 9; resolution method

a) Prove the logical validity of the following arguments.

All students are hardworking.

Some people are not hardworking.

Some people are not students.

Who plays tennis and football is a sportsman.

Some are not sportsmen though they play football.

Some play football but not tennis.

No student is retired.

Who is not retired is young.

All students are young.

b) Prove the logical validity of the formula

$$\forall x [\exists y Q(x,y) \vee \forall z \neg Q(x,z)]$$

$$\forall x \{[P(x) \supset Q(x,f(a))] \wedge P(a)\} \supset \exists x Q(x,f(x))$$

$$\exists x [P(x) \vee Q(x)] \equiv [\exists x P(x) \vee \exists x Q(x)]$$