PHIL1012 INTRODUCTION TO LOGIC

PROBLEM SET 6 (S2 2021)

Submit your answers to Problem Set 6 via Canvas before 23:59, Wednesday of Week 9.

1. Here is a model M:

$$\text{Domain: } \{1,2,3,4,5\}$$
$$P : \{1,3,5\},\ Q : \{2,4,5\},\ R : \emptyset,\ S : \{3,4\}$$
$$a : 3,\ b : 4$$

Is the proposition $\forall x((Px \wedge Qx) \to Sx) \vee (Rb \leftrightarrow Pa)$ true or false in M? Explain.

2. Define a model in which all of the following propositions are true.

$$\exists x(Gx \wedge Hx)$$
$$\forall y Hy \to \exists z \neg Fz$$
$$Fb \leftrightarrow \forall x(Gx \vee Hx)$$