

MAT385 Quiz 03, Spring 2023

Name:

1. (2pts) Write the negation of each of the following statements:

a. Some farmer grows only corn.

b. Corn is grown only by farmers.

2. (3pts) Using the following predicate symbols, in the domain of “the whole world”, write each English language statement as a predicate wff:

•  $C(x)$ :  $x$  is a Corvette

•  $F(x)$ :  $x$  is a Ferrari

•  $P(x)$ :  $x$  is a Porsche

•  $S(x, y)$ :  $x$  is slower than  $y$

a. Nothing is both a Corvette and a Ferrari.

b. Some Porsches are slower than no Corvette.

c. If there is a Corvette that is slower than a Ferrari, then all Corvettes are slower than all Ferraris.

3. (5pts) Prove (with reasons), or give an interpretation in which it is false:

$$(\forall y) [Q(x, y) \rightarrow P(x)] \implies [(\exists y) Q(x, y) \rightarrow P(x)]$$