

MAT385 Quiz 03, Spring 2025

Name:

1. (2pts) Write **the negation** of each of the following statements, in words or using predicate wffs:

a. Some professors only teach calculus classes.

b. Calculus classes are taught only by professors.

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

- $R(x)$ :  $x$  is a Rose
- $D(x)$ :  $x$  is a Daisy
- $P(x)$ :  $x$  is a Petunia
- $S(x, y)$ :  $x$  grows slower than  $y$

a. Nothing is both a Rose and a Daisy.

b. Some Petunias grow slower than no Rose.

c. If there is a Rose that grows slower than a Daisy, then all Roses grow slower than all Daisies.

3. (5pts) Prove:

$$(\forall x) (M(x) \longrightarrow P(x)) \wedge (\exists x) (S(x) \wedge M(x)) \longrightarrow (\exists x) (S(x) \wedge P(x))$$