MATH 348 Reading Questions

Sections 4.1-4.2 and Topologies in Applications

NAME _____

Answer the following questions, which will be checked for completeness at the beginning of the next class. From our text, finish reading Section 4.1, and read through page 45 of Section 4.2.

1. Sketch a diagram that illustrates Theorem 4.6.

2. Is the space $\mathrm{GL}(3, \mathbb{R})$ connected or disconnected? How can you show this?

3. For what values of n is the n-sphere S^n connected? Why?

4. If S is a connected space, T is a discrete space, and $f : S \to T$ is a continuous map, then what can you conclude about f?

Read "Examples of Topologies in Applications," linked from the course website.

5. What are the basis elements in the *digital plane* topological space?

6. What is a *phenotype space*?