

Math 220-Homework 2

Due Thursday 02/05 at the beginning of class

PART A

Problems from the textbook:

- Section 1.3 #1b,c; 2c; 3(b,c,d); 4, 5, 6, 17

PART B

1. Negate the following statements:

(a) *There is a cold medication that is safe and effective.*

(b) If x is a real positive number, then there is a real positive number ε such that $x < \varepsilon$ and $\frac{1}{\varepsilon} < x$.

2. Prove that the following statement is a tautology, a contradiction, or neither. You must state which of the three it is as well as give the proof.

$$\neg((\neg Q \wedge (P \Rightarrow Q)) \Rightarrow (\neg P))$$

3. In each of the following statements identify the hypothesis (assumption) and conclusion.

(a) n^2 is odd whenever n is an odd integer.

Hypothesis:

Conclusion:

(b) In order to pass the drivers test, the candidate must be able to parallel park.

Hypothesis:

Conclusion:

4. Disprove the following statement:

“Let $n \in \mathbf{Z}$. If $n^2 + 3n$ is even, then n is odd.”

5. Write the following statement using “if, then”:

“A sufficient condition for a triangle to be isosceles is that it has two equal angles.”