Review for Exam 2– MATH 313

Exam 3 will cover the following Chapters and Sections: 4.1-4.6, 5.1-5.4, 6.1-6.4, 6.6, 7.1, 7.2, 8.1, 8.2

1. tautologies and logical truth, tautological and logical equivalence, tautological and logical consequence. Conjuctive and disjunctive form. **Taut Con**

2. Methods of proof: proof by cases (informal and formal/Fitch), Proof by contradiction. Proper and formal uses of subproof.

3. $\wedge$ **Elim**, $\wedge$ **Intro**, $\vee$ **Intro**, $\vee$ **Elim**, $\neg$ **Elim**, $\neg$ **Intro**, $\perp$ **Intro**, $\perp$ **Elim**

4. $\rightarrow$ (conditional), If P then Q, P only if Q, Q provided P, Q if P, Q is necessary for P. (Also with negations: Unless P, Q; Q unless P.) Conditional, inverse, converse, contrapositive. (Sufficient, etc.) Proving a conditional statement.

5. $\leftrightarrow$ (biconditional). if and only if, iff. Proving biconditionals, proving a cycle of conditionals.

6. $\rightarrow$ **Elim**, $\rightarrow$ **Intro**, $\leftrightarrow$**Elim**, $\leftrightarrow$ **Intro**

7. Know how to prove $\sqrt{2}$ is irrational.

8. Know the proof on page 156. This proof show how to use fitch to obtain that A implies $\neg\neg A$.

9. Use Tarski's World for counterexamples.

11. anything else we have covered in class or in the book and which is not here