

Math 3120

Final Exam Review Chapters 1 and 2 (chapters 3, 4, & 5 to come later)

Memorize: tautology pg 6

Know:

- even, odd, divides
- subset, empty set, universe, equal sets, intersection, union, complement, subtraction of sets, disjoint

Topics:

Chapter 1

- truth tables
- conditional, converse, inverse, contrapositive
- translating words to conditional pg 16
- negating statements involving quantifiers
- truth of statements, given a universe
- direct proof
- proof by exhaustion (cases)
- working backwards
- proof by contraposition
- proof by contradiction
- iff proofs
- proof by construction

Chapter 2

- power sets
- proving something is a subset
- proving sets are equal
- Venn diagrams
- set theory proofs
- families of sets
- induction

Hw 29 Chapters 1 and 2 Review

Due Friday, December 8, by 5pm. Be sure to show your work and justify your answers.

1.1: 2i

A. Give a negation.

- a)  $-1 \leq \sin \alpha \leq 1$
- b)  $x$  is odd or  $y$  is odd

1.2: 6b,8acfgi

B. Which of the following statements are equivalent to *If schools aren't properly funded, then students do worse academically?*

- a) *If students do worse academically, then the schools aren't properly funded.*
- b) *If schools are properly funded, then students don't do worse academically.*
- c) *If students don't do worse academically, then the schools properly funded.*

1.3: 1cefk,2cefk,5abi,7ab

C. List which of the numbers  $17, -\frac{17}{8}, 6-i, 3\pi, \sqrt{9}, 0, -1.245, \sqrt{-9}, -101, \frac{2}{\sqrt{6}}$ , and  $5.4$  are

- a) natural numbers
- b) whole numbers
- c) integers
- d) rational numbers
- e) irrational numbers
- f) real numbers
- g) complex numbers

1.4: 5c,6a,7j,8,9a

1.5: 3c,6d

1.6: 1a,2a

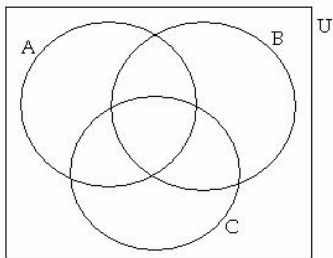
2.1: 3abh,4gh,6a,9ghi,14

2.2: 3afik,11b

D. Prove Theorem 2.6ano

E. Prove Theorem 2.7g

F. Shade the region  $(A \cap B) \cup C$  on the Venn diagram.



2.3: 1cd,5

2.4: 8cd

Good luck!