CSI 30 LECTURE NOTES (Ojakian)

Topic 10: Primes, GCD, LCM

OUTLINE
(References: 4.3)

1. Primes
2. GCD and LCM
3. Relatively Prime

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1. Primes
   (a) DEF: Be careful to exclude 1 ...
   (b) Fundamental Theorem of Arithmetic
   (c) Check up to square root.
   (d) Some big open problems ...
      i. Twin Prime Conjecture (read about Zhang on page 280)
      ii. Goldbach's Conjecture
2. LCM and GCD
   (a) Definition. Note distinction.
   (b) Questions:
      i. Always GCD $\leq$ LCM?
      ii. Possible for GCD = LCM?
   (c) Finding GCD and LCM.
      i. Find prime factorization (in both cases)
      ii. For each prime factor take the least exponent (for GCD), and take the greatest exponent (for LCM).
      iii. Take the product of each prime factor to its exponent
3. Relatively Prime
   (a) DEF.
4. Exercises
   Section 4.3: 1 - 5, 14, 24 - 27, 30
   Section 4.3: 28, 29 (skip verification part)