Adam Gincel

Homework 6

*I pledge my honor that I have abided by the Stevens Honor System.*

4.1

1. a | c means c = a\*n and b | d means d = b\*m
   * 1. ab | cd means cd = ab\*k
     2. (a\*n) \* (b\*m) = ab\*k
     3. Dividing out a and b yields k = n\*m.
     4. Plugging that back in yields cd = ab\*nm, which can be written as a\*n \* b\*m = ab\*nm, which is true.
2. .
   1. A = -111 and m = 99
      1. -111 div 99 = -111/99
      2. -111 mod 99 = -12
   2. A = -9999 and m = 101
      1. -9999 div 101 = 99
      2. -9999 mod 101 = 0
   3. A = 10299 and m = 999
      1. 10299 div 999 = 10299/999
      2. 10299 mod 999 = 309
3. .
   1. (1 0100 0001)2
   2. (11 1111 1111)2
4. .
   1. (27)­10

4.3

1. .
   1. 39 = 3 and 13
   2. 81 = 3, 3, 3, and 3.
2. .
   1. 5, 7, 11
3. .
   1. .
      1. 21 has 3 and 7
      2. 34 has 2 and 17
      3. 55 has 5 and 11
      4. The set is pairwise relatively prime.
   2. .
      1. 14 has 2 and 7
      2. 17 is prime
      3. 85 has 5 and 17
      4. The set is not pairwise relatively prime.
   3. .
      1. 25 has 5 and 5
      2. 41 is prime.
      3. 49 has 7 and 7.
      4. 64 has 8 and 8.
      5. The set is pairwise relatively prime.
4. .
5. 277 mod 123 = 31
   * 1. Gcd(123, 31), 123 mod 31 = 30
     2. Gcd(31, 30); 31 mod 30 = 1
     3. Gcd(30, 1); 30 mod 1 = 0
     4. Gcd(1, 0); Gcd(123, 277) = 1
6. .
   1. 58
   2. 60
   3. 52
   4. 3
7. 3, 6, 4, 3, 6, 4…
8. STOP POLLUTION
   1. WXST TSPPYXMSR
   2. NOJK KNGGPODJI
   3. QHAR RABBYHCAJ