CSCI 1900 - Homework 14 - B

**Section 9.1, 9.2, 9.3: Relations** *(59)*

1. Determine *x* and *y* such that the equations below are true. (3)
   1. (13, *y*2) = ( 2*x*-1, 16)
   2. (CSCI\_1900, CSCI\_1260) = ( *y*, *x* )
   3. ( *x*, *y* ) = ( *x*2, *y*2 )
2. Given sets A={ 1, 2 } B={ @, #, \* } (2)
   1. Give A x B
   2. Give A x A
3. Given the set , the set of real numbers and a relation *R* define on *C* such that

*x R y* iff

The set *R* contains all points on a circle of radius 2, with the center at (0.0, 0.0 ). Which of the following ordered pairs belong to *R*?

* 1. ( 0.0, 0.0 ) (1)
  2. ( 2.0, 0.0 ) (1)
  3. (1)
  4. (0.0, -2.0) (1)
  5. (1)
  6. (1)

For problems 4-8 give the domain, range and matrix. If the relation is to and from the same set, draw the diagraph.

1. (4)
2. (4)
3. (4)
4. (4)
5. (4)
6. (4)

For problems 10 – 13, determine if the given relations are reflexive, irreflexive, symmetric, asymmetric, or transitive. The relations are defined on

1. (5)
2. (5)
3. (5)
4. *a* and *b* are relatively prime (5)

For problems 14 – 16, determine if the given relations are equivalence relations. The relations in problems 14 – 16 are defined on

1. (1)
2. (1)
3. (1)
4. Let the set a be the set of all students enrolled in ETSU in the Spring 2012 semester; a relation *R* exists only if two students have the same last name. (1)