1. Consider the database with the following records:

<u>Part</u>	Serial Number	Quantity in Stock	Weight (ozs.)	<u>Price (\$)</u>
Widget	11223344	200	305	10
Gizmo	11225566	110	150	15
Whacker	22114433	110	250	10
Thumper	99999911	475	900	75
Sweeper	12341234	250	456	22
Sweeper	12345678	250	800	35

(a) What field(s) would suffice as Primary Key(s)?

(b) Find P_{2,3,5}

Name _____

CMSC 203 - Homework Assignment 5 - Due December 5, 2002

2. (a) Find the matrix representing the relation on $\{1, 2, 3, 4, 5\}$ given by:

 $R = \{(1,4), (1,3), (3,2), (3,5), (2,2), (4,4), (2,5), (4,1), (4,2), (5,1), (5,2), (5,3), (5,4), (5,5)\}$

(b) Find $(M_R \land M_R)$, $(M_R \lor M_R)$, and M_R^2 for the relation on {1, 2, 3, 4} whose matrix

representation is $\mathbf{M}_R = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$.

3. Consider the relation, R, on the set $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$ given by the graph:



(a) Find [1]

```
(b) Find the partition of A induced by R
```

4. Find the relation, R, that induces the partition { $\{1, 3\}, \{2, 4, 6, 9\}, \{5\}, \{0, 7, 8\}$ }.

5. Find the Truth Table for the Boolean Function, F(w, x, y, z) = (wx)' + z(w' + y)

W	X	y	Z	F(w, x, y, z)
1	1	1	1	
1	1	1	0	
1	1	0	1	
1	1	0	0	
1	0	1	1	
1	0	1	0	
1	0	0	1	
1	0	0	0	
0	1	1	1	
0	1	1	0	
0	1	0	1	
0	1	0	0	
0	0	1	1	
0	0	1	0	
0	0	0	1	
0	0	0	0	
				1

6. Find the Disjunctive Normal Form of the Boolean Function, F(w, x, y, z) = wz' + xy'z