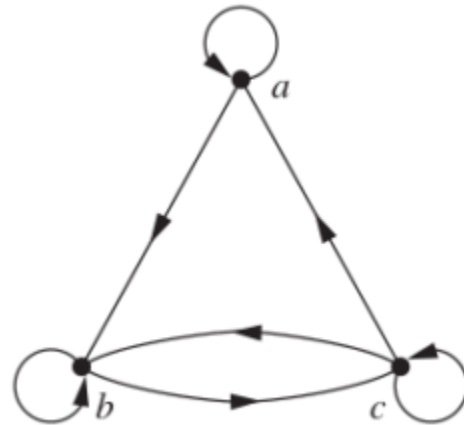CS 222

Name: _____

Homework 7: Graphs, Relations

Due date: Friday 04/13/2021

Print and write work on this worksheet. Write clearly and show **all** work for full credit.

1. The relation R is represented in the figure as a digraph. Complete the following:
    a. Write the enumeration representation of R (set of ordered pairs)) (3.5 points)

    b. Write the matrix representation of R (3.5 pts)

    c. Determine if the relation is reflexive, irreflexive, symmetric, asymmetric, antisymmetric, and/or transitive. (3 points)

2. Let $R = \{(1,3),(1,4),(2,1),(2,2),(3,1),(3,3),(4,1)\}$ on set $A = \{1,2,3,4\}$

   a. Write the matrix representation of R. (3.5 points)

   b. Draw the digraph representation of R. (3.5 points)

   c. What is the reflexive closure of R? (2 points)

   d. What is the symmetric closure of R? (1 point)

   e. What is the transitive closure of R? (6 points)