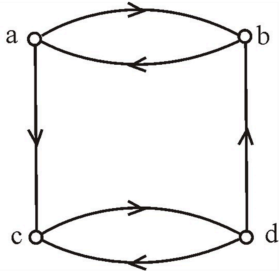
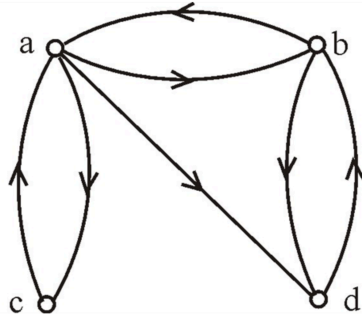


Q3: Let R be the relation $\{(a, b) \mid a \text{ divides } b\}$ on the set of integers. What is the symmetric closure of R ?

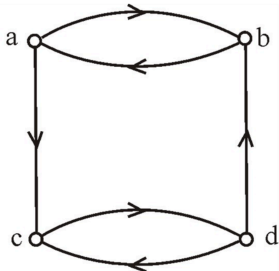
Q5: draw the directed graph of the reflexive closure of the relations with the directed graph shown.



Q7: draw the directed graph of the reflexive closure of the relations with the directed graph shown.



Q9: Find the directed graphs of the symmetric closures of the relations with directed graphs shown.



Q13: Suppose that the relation R on the finite set A is represented by the matrix M_R . Show that the matrix that represents the symmetric closure of R is $M_R \vee M_R^t$

Q19: Let R be the relation on the set $\{1, 2, 3, 4, 5\}$ containing the ordered pairs $(1, 3)$, $(2, 4)$, $(3, 1)$, $(3, 5)$, $(4, 3)$, $(5, 1)$, $(5, 2)$, and $(5, 4)$. Find

A. R^2

B. R^3

C. R^4

D. R^5

E. R^6

F. R^*

Q25: Use Algorithm 1 to find the transitive closures of these relations on $\{1, 2, 3, 4\}$.

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