

Work right on this page and then staple it (at the back) to your work for the problems assigned from the book.

1. In each part below, draw a digraph for a relation on $A = \{1, 2, 3, 4, 5\}$ that meets the indicated properties. If not possible, say why. The parts are separate, so you'll likely have a different digraph each time.

(a) The relation is transitive but NOT reflexive, uses all of domain/codomain A , and has $1R3$, $3R1$, and $3R4$.

(b) The relation is symmetric but not transitive and uses all of domain/codomain A .

(c) The relation is reflexive, but not symmetric and not transitive.

2. (a) Create a set of ordered pairs that is a relation on $A = \{p, q, r, s\}$ and contains (p, q) and (q, p) , yet is not symmetric.

(b) Create a set of ordered pairs that is a relation on $A = \{p, q, r, s\}$ and contains (p, q) , (q, r) , and (p, r) , yet is not transitive.

3. A relation on $A = \{x, y, z, w\}$ is defined by $R = \{(x, w), (y, w), (z, w), (w, w)\}$. Is the relation transitive or not? Explain. (You may also draw a digraph, if you like.)