

Assignment 12, Discrete Math
Covers sections 10.1-10.2

1. 10.1 #4(a)(d)(e)
2. 10.1 #13
3. 10.1 #16
4. 10.2 #3(a)(b)(d)
5. 10.2 #23

To make our lives easier, we call a walk from u to v a “ (u, v) -walk” and call a path from u to v a “ (u, v) -path.”

6. Let $G = G(V, \mathcal{E})$ be a graph, and let $u, v \in V$. Prove that there is a (u, v) -walk if and only if there is a (u, v) -path.
7. Let $G = G(V, \mathcal{E})$ be a graph, and define a binary relation \sim on V by

$$v \sim w \iff \text{there is a path from } v \text{ to } w.$$

Show that \sim is an equivalence relation on V .

(note: we allow for paths of length 0 which consist of a single vertex with no edges)