

#### 测试题解答 7.4

$$(1) R = \{ \langle 0, 4 \rangle, \langle 3, 3 \rangle, \langle 6, 2 \rangle, \langle 9, 1 \rangle, \langle 12, 0 \rangle \}$$

$$\text{dom}R = \{0, 3, 6, 9, 12\}$$

$$\text{ran}R = \{0, 1, 2, 3, 4\}$$

$$R \circ R = \{ \langle 3, 3 \rangle, \langle 12, 4 \rangle \}$$

$$(2) R \upharpoonright \{2, 3, 4, 6\} = \{ \langle 3, 3 \rangle, \langle 6, 2 \rangle \}$$

$$R[\{3\}] = \{3\}$$

$$R^3 = \{ \langle 3, 3 \rangle \}$$

(3) 可根据关系矩阵计算  $R$  的幂，得到  $R^0 = R^6$ .