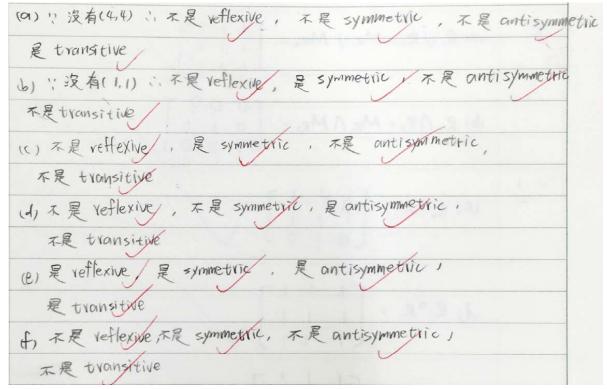
第1題.



第2題.

2^{mn}

第3題.

(a) $R^{-1} = \{(a,b)|b \ divides \ a\}$

(b) $\overline{R} = \{(a, b) | a \ can't \ divide \ b\}$

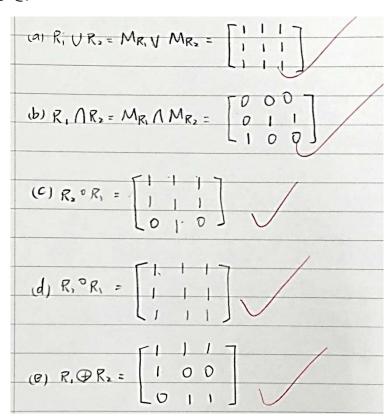
第4題.

$$M_{R} = \begin{bmatrix} 0 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$

$$R^{2} = M_{R}^{2} = \begin{bmatrix} 0 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix} \times \begin{bmatrix} 0 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix} = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$$

$$R^{3} = M_{R}^{3} = M_{R}^{3} = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$$

第5題.



第6題.