

Problem Sheet 4 Relations & Functions

Q1)

- $R = \{(2,6), (2,9), (2,10), (2,11), (2,12), (5,11), (5,12)\}$
- $S = \{(5,10), (6,11), (7,12)\}$
- $R \cup S = \{(2,6), (2,9), (2,10), (2,11), (2,12), (5,10), (5,11), (5,12), (6,11), (7,12)\}$
- $R \cap S = \emptyset$

Q2)

- $R = \{(1,2), (1,10), (1,12), (2,12), (5,10)\}$
- $S = \{(2,9), (5,12)\}$
- $R \cup S = \{(1,2), (1,10), (1,12), (2,12), (5,10), (2,9), (5,12)\}$
- $R \cap S = \emptyset$

$$\begin{array}{l|l} \text{Q3)} & 3x^2 - 2x + 8 \\ f(3) = 29 & x^2 + 4xy + 6y^2 - 5 \\ f(-2) = 24 & g(2,1) = 9 \\ & g(-1,0) = -8 \end{array}$$

Q4)

(i) Not reflexive

Is symmetric

Is transitive

(ii) Not reflexive

Is symmetric

Not transitive