

Consider the following relations on \mathbb{R} :

- $S = \{(x, y) \mid x^2 + y^2 \leq 1\}$
- $T = \{(x, y) \mid y = x^2\}$
- $U = \{(x, y) \mid y = 2x\}$
- $V = \{(x, y) \mid x^2 + (y - 1)^2 = 4\}$

Problem 1 Find $S \circ T$

Problem 2 Find $T \circ S$

Problem 3 Find $U \circ V$

Problem 4 Find $S \circ V$

Problem 5 Find $V \circ S$