

HW 16**Due:** 29 October 2009

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COSC 2300

Read about composition, inverse and complement of relations in the lecture notes.

Consider the following relations.

$$S = \{\langle x, y \rangle \in \mathbb{Z} \times \mathbb{Z} \mid y = x^2\}$$

$$R = \{\langle x, y \rangle \in \mathbb{Z} \times \mathbb{Z} \mid y = x + 5\}$$

Describe the following relations based on these definitions of S and R .

1. $R \circ S$
2. $S \circ R$
3. S^{-1} (be careful – both elements of the pair must be in \mathbb{Z} .)
4. R^{-1}
5. $S^{-1} \circ S$
6. $S \circ S^{-1}$