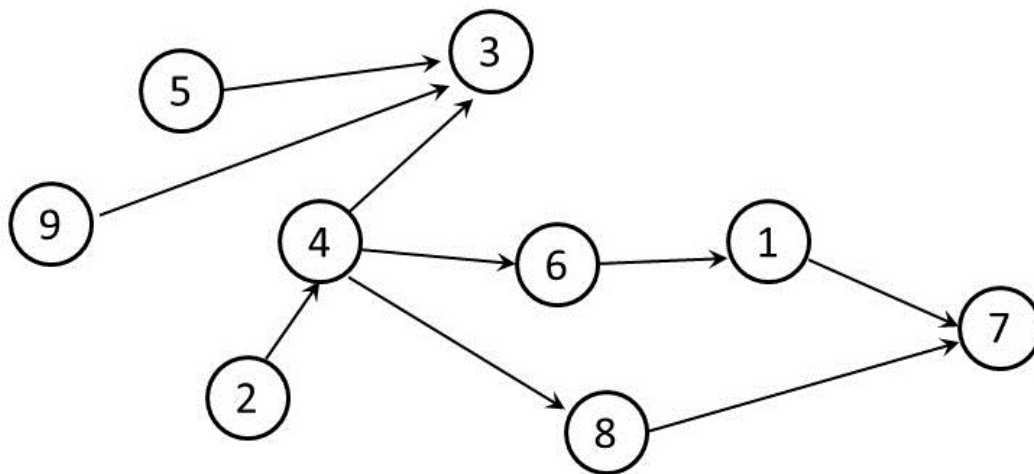# Quiz 6

Instructor: Sandy Irani

1. Consider the following relation on $\mathbb{R} \times \mathbb{R}$: $(a, b)R(c, d)$ if and only if $a \leq c$ **and** $b \leq d$.

    (a) Is the relation a partial order?

    (b) If your answer to the previous question was no, give an example showing that one of the conditions is violated. If your question to the previous answer was yes, is the relation also a total order?

2. Consider the following relation on $\mathbb{R} \times \mathbb{R}$: $(a, b)R(c, d)$ if and only if $a \leq c$ **or** $b \leq d$.

    (a) Is the relation a partial order?

    (b) If your answer to the previous question was no, give an example showing that one of the conditions is violated. If your question to the previous answer was yes, is the relation also a total order?

3. Which of the following sequences are topological sorts for the directed acyclic graph below?

    (a) 9, 2, 5, 4, 3, 8, 1, 6, 7
    (b) 9, 2, 5, 4, 8, 5, 1, 7, 3
    (c) 9, 2, 5, 3, 4, 6, 8, 1, 7