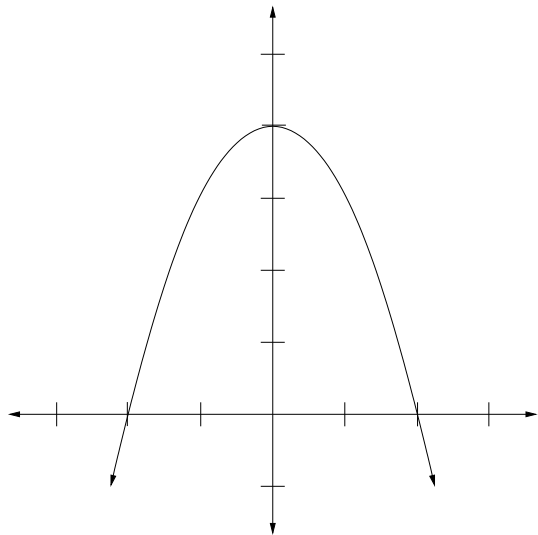


Chapter 5 roadmap:

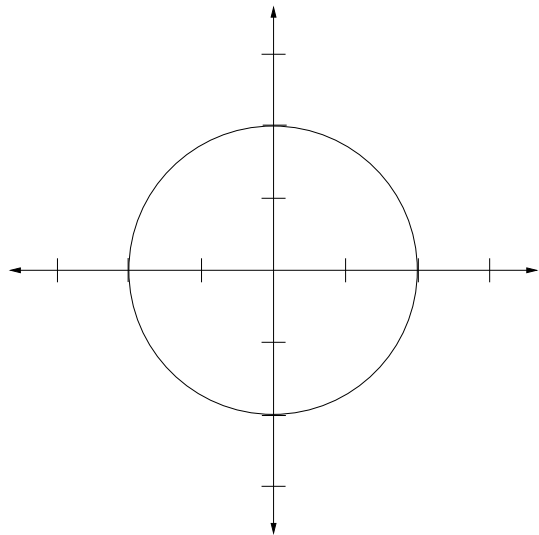
- ▶ Introduction to relations (**Today**)
- ▶ Properties of relations (Wednesday and Friday)
- ▶ Transitive closure (Monday, Mar 13)
- ▶ Partial order relations (Wednesday, Mar 15)
- ▶ Review for Test 2 (Friday, Mar 17)

Today: Introduction relations

- ▶ Definition
- ▶ Examples
- ▶ Other terms
 - ▶ Image
 - ▶ Inverse
 - ▶ Composition
- ▶ Code representation
- ▶ Proofs



$$y = 4 - x^2$$



$$y^2 = 4 - x^2$$

Consider the set of students $\{\text{Alice, Bob, Carol, Dave}\}$. Suppose they all sit in the front row, with this seating arrangement:

Dave	Alice	Carol	Bob
------	-------	-------	-----

Consider the relation *sitsNextTo* on this set. Determine which of the following are true.

$\text{Carol} \in \textit{sitsNextTo}$

$(\text{Dave, Alice}) \in \textit{sitsNextTo}$

$(\text{Dave, Bob}) \in \textit{sitsNextTo}$

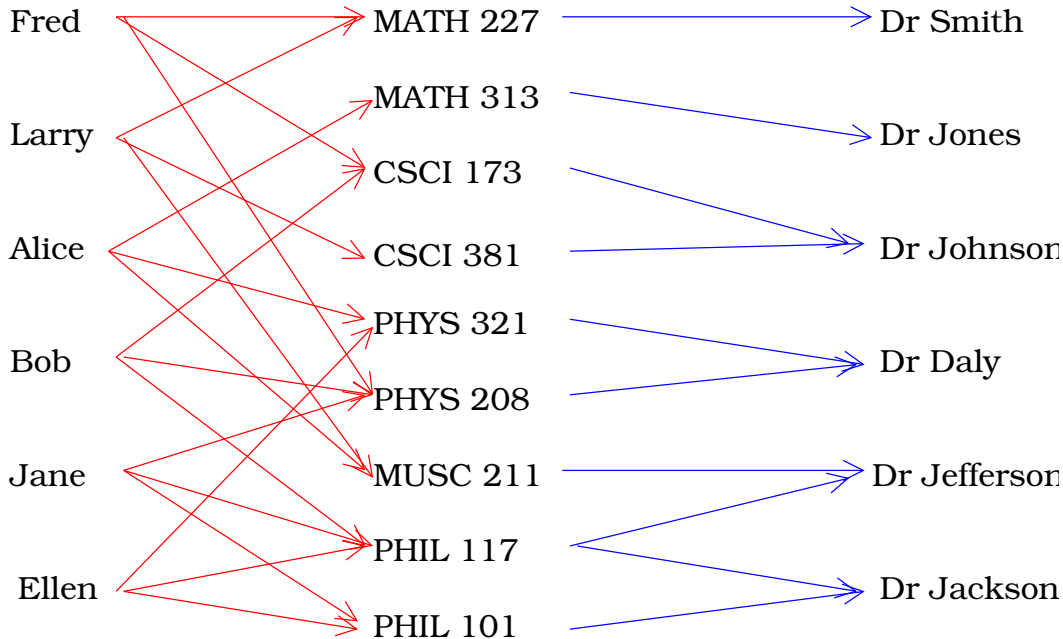
$(\text{Alice, Carol}) = \textit{sitsNextTo}$

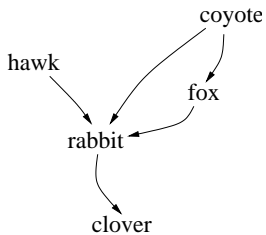
$\textit{sitsNextTo} = \{\text{Dave, Alice, Carol, Bob}\}$

$\textit{sitsNextTo} = \{(\text{Dave, Alice}), (\text{Alice, Carol}), (\text{Carol, Bob})\}$.

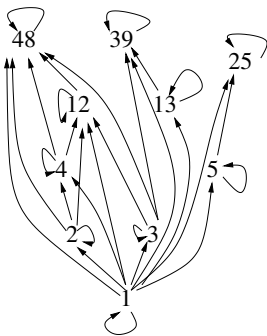
$\textit{sitsNextTo} =$

$\{(\text{Alice, Carol}), (\text{Alice, Dave}), (\text{Bob, Carol}), (\text{Carol, Alice}), (\text{Carol, Bob}), (\text{Dave, Alice})\}$

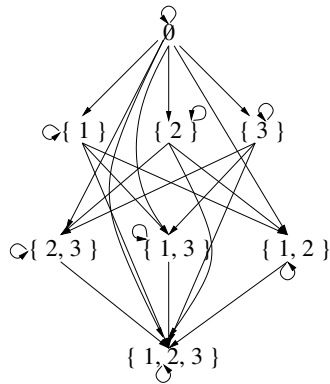




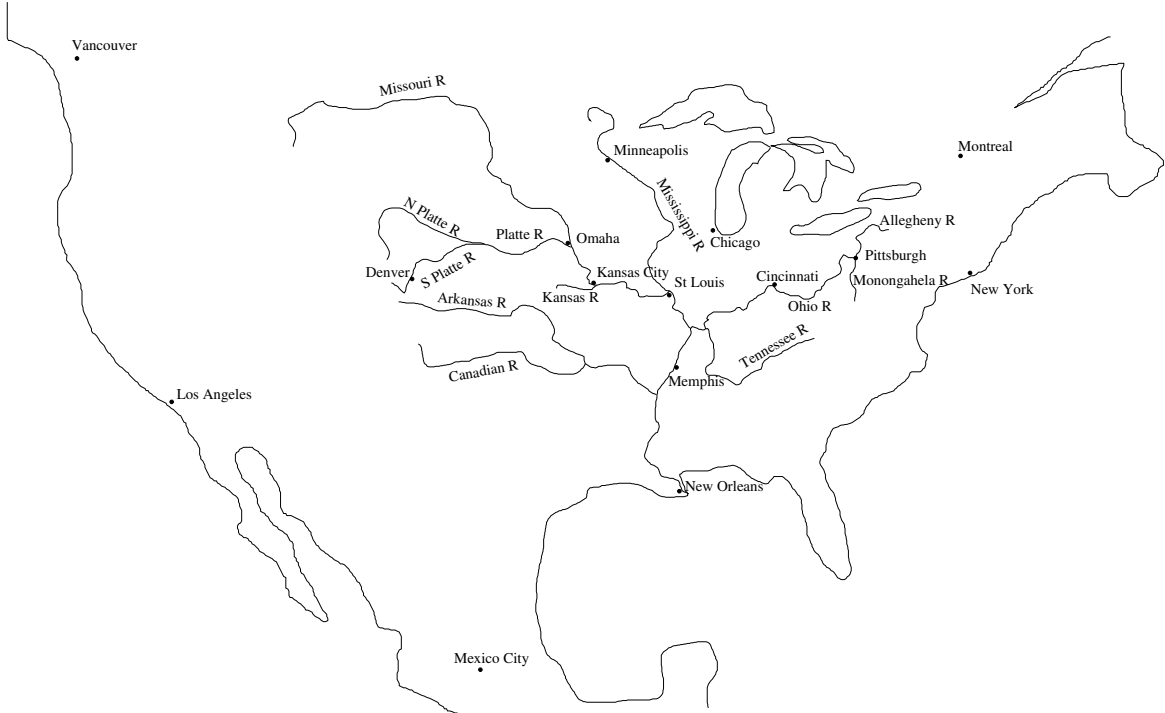
eats

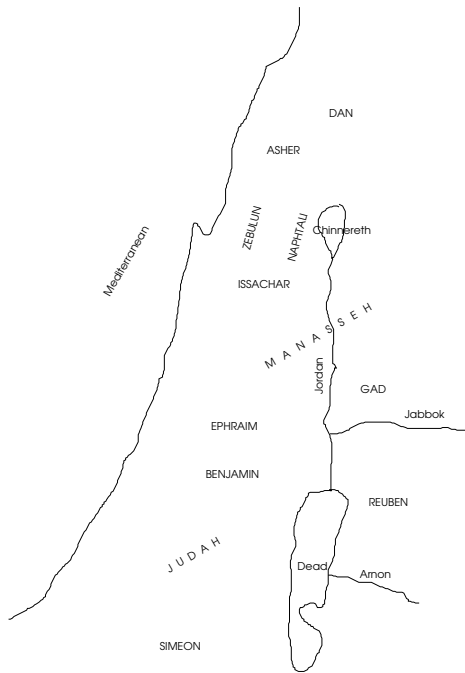


| (divides)



\subseteq (subset)





Chapter 5 roadmap:

- ▶ Introduction to relations (**Today**)
- ▶ Properties of relations (Wednesday and Friday)
- ▶ Transitive closure (Monday, Mar 13)
- ▶ Partial order relations (Wednesday, Mar 15)
- ▶ Review for Test 2 (Friday, Mar 17)

For next time:

Pg 205: 5.3.(8, 10, 12, 13)

Read 5.4

Take quiz