

21 - Final Review 2

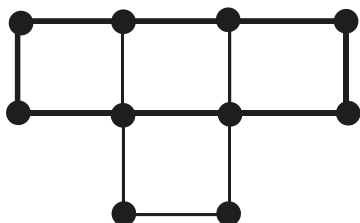
Practice problems.

14. How many 5-digit ternary numbers start with the digit 1, like the number 12002_3 ?
15. The front row at a concert has 10 seats. How many different seating charts are there that assign 5 different people into these 10 seats? (The people's names are placed on 5 of the 10 seats to reserve their seats.)
16. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. How many subsets $A \subseteq U$ satisfy $\{3, 5\} \subseteq A$?
17. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. How many subsets $A \subseteq U$ satisfy $|A| = 3$?
18. Draw 5 cards from a standard 52-card deck. How many 5-card hands have at least one Ace?
19. How many 5-card hands drawn from a standard deck of 52 playing cards have exactly 2 red cards?
20. In how many ways can we assign 3 junior students and 2 senior students to be on a committee from a group of 8 junior students and 10 senior students?
21. Is $(p \Rightarrow q) \vee q$ logically equivalent to $p \Rightarrow q$? Explain.
22. Consider the predicate $P(x) = "\forall y \in \mathbb{R} : y/x \geq x/2"$. Is $P(1)$ true or is it false? Explain.
23. Let $T(x) = "x$ has thorns", $P(x) = "x$ has petals", and R be the set of all roses. Write "If every rose has thorns or petals, then some rose has petals." in terms of x , $T(x)$, $P(x)$, R , \forall , \exists , \in , $:$, $[,]$, \wedge , \vee , \neg , \Rightarrow .
24. The statement "If $x > 1$, then $x^2 > 1$ " is true. Select one statement below that is also true.
 - "If $x \leq 1$, then $x^2 \leq 1$ "
 - "If $x^2 \leq 1$, then $x \leq 1$ "
 - "If $x^2 > 1$, then $x > 1$ "

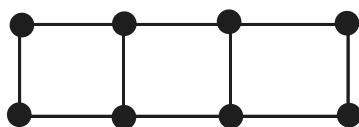
25. Draw a (simple) graph G with four vertices whose degrees are 1, 2, 3, 4, respectively. If such a graph does not exist, explain why not.

26. For each graph below, draw an Euler walk by labeling the edges with increasing real numbers in the order that the edges are traversed, or explain why this task is impossible.

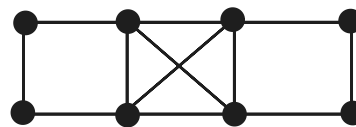
(a)



(b)



(c)



27. Decide office hour time to prepare for final exam (Sunday May 3, Monday May 4).

28. Do student evaluations survey at <https://rowan.campuslabs.com/eval-home/> or via Canvas > Home > Student Ratings of Instruction – IDEA.

29. Do quiz.