

Four of these problems will be graded (my choice, not yours!), with each problem worth 5 points. Clear and complete justification is required for full credit. You are welcome to discuss these problems with anyone and everyone, but must write up your own final submission without reference to any sources other than the textbook and instructor. Submit as a pdf on Moodle.

The Fibonacci numbers are defined by the two-term recurrence relationship

$$F_1 = 1, F_2 = 1, F_{n+2} = F_{n+1} + F_n \text{ for } n \in \mathbb{Z}^+$$

1. Find F_3 through F_{10} .
2. $F_1 + F_2 + \dots + F_n = F_{n+2} - 1$ for every $n \in \mathbb{Z}^+$.
3. Find $\mathcal{P}(\{1, 2, 3\})$.
4. If A has n elements, then $\mathcal{P}(A)$ has 2^n elements. [Hint: Induction!]
5. Take the Set Theory Gateway on WeBWorK.
6. For any sets A and B , $(A \cup B)' = A' \cap B'$.
7. For any sets A, B and C , $(A \cup B) \cap C = A \cup (B \cap C)$.
8. For any sets A, B , and C , $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$.
9. For any sets A, B , and C , $(A - C) \cap B \subseteq A \cap B$.
10. For any sets A, B and C , $(B - A) \subseteq (C - A) \cup (B - C)$.