QUIZ 2  (MATH 61, SPRING 2017)

Your Name: ____________________________________________

UCLA id: ____________________________________________

Math 61 Section: ______

Date: ___________

The rules:
This is a multiple choice quiz. You must circle answers with an ink pen.
If two or more answers are circled, the answer is not accepted.
You are allowed to use only this paper and pen/pencil. No calculators.
No books, no notebooks, no phones, no web access. Automatic deduction for these.
You MUST write your name in ink.

Points: (10 per correct answer)

_________________________________
**Question 1.** The first six terms of \( \{a_n, n = 1, 2, \ldots \} \) are \( 1, 1, 2^2+2, 2^3-3, 2^4+4, 2^5-5, \ldots \)
Then \( a_{10} \) is equal to:

\[
2^9 - 9 \quad 2^9 + 9 \quad 2^{10} - 10 \quad 2^{10} + 10 \quad 2^{11} - 11 \quad 2^{11} + 11
\]

**Question 2.** Which of these sequences \( \{a_n\} = (1, 2, 3, 5, 8, 11, \ldots), \{b_n\} = (10, 19, 28, 37, \ldots), \{c_n\} = (2^1, 3^2, 4^3, 5^4, 6^5, \ldots), \{d_n\} = (1^2, 2^3, 3^5, 4^8, 5^{13}, \ldots) \) are increasing? *Circle all that apply!*

\[
\{a_n\} \quad \{b_n\} \quad \{c_n\} \quad \{d_n\} \quad \text{I need more terms!}
\]

**Question 3.** The relation \( R \) on \( \mathbb{Z} \) is defined by \( xRy \) if and only if \( x + y = 0 \mod 2 \), for all \( x, y \in \mathbb{Z} \). Then \( R \) is:

ref sym ref, sym ref, tr sym, tr eq

(here ref=reflexive, sym=symmetric, tr=transitive, eq=equivalence relation)

**Question 4.** The relation \( R \) on \( \mathbb{Z} \) is defined by \( xRy \) if and only if \( x + y = 0 \mod 4 \), for all \( x, y \in \mathbb{Z} \). Then \( R \) is:

ref sym ref, sym ref, tr sym, tr eq

**Question 5.** We proved in class that \( F_n \leq 2^n \) for all \( n \geq 1 \)

by induction by contradiction by case analysis by another method