QUIZ 4 (MATH 61, FALL 2013)

Your Name: ________________________________

UCLA id: ________________________________

Math 61 Section: _________

Date: ________________

The rules:
This is a multiple choice quiz. You must circle only correct answers with an ink pen.
Every correct answer is scored positively, every false answer negatively.
You are allowed to use only this paper and pen/pencil. No calculators.
No books, no notebooks, no web access. You MUST write your name.

Points: (10 per correct answer)
Question 1. Suppose sequence \(\{a_n\}\) is defined by \(a_1 = 1, a_2 = 2,\) and \(a_{n+1} = a_n + a_{n-1}\) for all \(n \geq 1.\) The \(a_n\) is equal to:

\[
n \quad 2^{n-1} \quad F_{n-1} \quad F_n \quad F_{n+1} \quad \text{none of these}
\]

Question 2. In college, 100 students live in 11 dorms. Then there are at least

8 9 10 11 12

students living in the same dorm. **Important:** circle all that apply!

Question 3. The LHRR \(a_n = a_{n-1} - a_{n-2} - a_{n-4}\) has this many initial values: has

2 3 4 5 6

Question 4. Which of the following recurrence relations are linear homogeneous (LHRR)?

\[
a_{n-1} = a_n - a_{n+1} \quad a_n = 7a_{n-1} + 5 \quad a_{n+2} = a_n + a_3 \quad a_{2n} = a_n + a_{n-1}
\]

**Important:** circle all that apply!

Question 5. The Pigeonhole Principle is proved:

by contradiction \hspace{1cm} \text{by induction} \hspace{1cm} \text{using bijections} \hspace{1cm} \text{using another method}