

QUIZ 2 (MATH 61, SPRING 2015)

Your Name: -----

UCLA id: -----

Math 61 Section: -----

Date: -----

The rules:

This is a multiple choice quiz. You must circle exactly one answer 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 web access. You **MUST** write your name.

Points: (10 per correct answer)

Question 1. The first six terms of $\{a_n, n = 1, 2, \dots\}$ are $1, \frac{-1}{3}, 9, \frac{-1}{27}, 81, \frac{-1}{243}, \dots$. Then a_{11} is equal to:

$$\frac{1}{3^{10}} \quad \frac{-1}{3^{11}} \quad 3^{10} \quad \frac{1}{3^{11}} \quad -3^{10} \quad -3^{11}$$

Question 2. Which of these sequences $\{a_n\} = (3, 1, -1, -3, -5, -7, \dots)$

$$\{b_n\} = \left(\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \dots\right) \quad \{c_n\} = (100 - 1, 200 - 4, 300 - 9, 400 - 16, 500 - 25, \dots)$$

are decreasing?

$$\{a_n\} \quad \{b_n\} \quad \{c_n\}$$

Circle all that apply!

Question 3. Seven children have in total 50 pencils. Then there is a child with at least this many pencils:

$$3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8$$

Circle all that apply!

Question 4. The relation R is defined on $\mathbb{Z} = \{0, \pm 1, \pm 2, \pm 3, \dots\}$ by xRy if and only if $x^2 + y^2 = 0 \pmod{4}$. Then R is:

$$\text{ref} \quad \text{sym} \quad \text{ref, sym} \quad \text{ref, tr} \quad \text{sym, tr} \quad \text{eq}$$

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

Question 5. The relation R is defined by xRy if and only if $x^2 - y^2 = 0 \pmod{4}$. Then R is:

$$\text{ref} \quad \text{sym} \quad \text{ref, sym} \quad \text{ref, tr} \quad \text{sym, tr} \quad \text{eq}$$