

Choose ONE of the following problems.

1) Define the sequence of real numbers c_1, c_2, c_3, \dots as follows.

$$c_1 = 0$$
$$c_n = c_{\lfloor \frac{n}{2} \rfloor} + n^2$$

Show that $c_n < 4n^2$ for all indices $n = 1, 2, 3, \dots$

2) Show that all integers at least 12 can be written in terms of 3 and 5. That is, there are x and y such that $n = 3x + 5y$.