Quiz 9. Name:________________________

Open book. Please show your working.

1. Calculate $\sum_{i=0}^{4} 3i^2$.

**Solution:** (4 points)

$$\sum_{i=0}^{4} 3i^2 = 3(0) + 3(1) + 3(4) + 3(9) + 3(16) = 90.$$ 

2. Write the first 5 terms of the sequence defined by:

$$a_1 = \frac{8}{7} \quad \text{and} \quad a_{k+1} = a_k - \frac{1}{7}.$$ 

Write down a formula for $a_n$ in terms of $n$.

**Solution:** The first five terms are

$$\frac{8}{7}, 1, \frac{6}{7}, \frac{5}{7}, \frac{4}{7} \quad \text{(3 points).}$$ 

This is an arithmetic sequence, so the nth term is given by $a_n = dn + (a_1 - d)$.
In this case that is

$$a_n = -\frac{1}{7}n + \left(\frac{8}{7} + \frac{1}{7}\right) = -\frac{1}{7}n + \frac{9}{7} \quad \text{(3 points).}$$