Mathematics 174

Quiz # 13 Name: Key

You must show your work to get full credit.

1. If the following sequence is of the form $a_1, a_2, a_3 \ldots$

$$1, -4, 9, -16, 25, -36, \ldots$$

give a formula for a_n.

$a_n = (-1)^{n+1} n^2$

2. Compute the sum $\sum_{j=0}^{4}(2j+1)$. The sum is 25

$= (2(0)+1) + (2(1)+1) + (2(2)+1) + (2(3)+1) + (2(4)+1)$

$= 1 + 3 + 5 + 7 + 9$

$= 25$

3. Compute the product $\prod_{k=1}^{6} \frac{k}{k+2}$ and reduce to lowest terms.

The product is $\frac{1}{28}$

$\prod_{k=1}^{6} \frac{k}{k+2} = \frac{1}{3}\frac{2}{4}\frac{3}{5}\frac{4}{6}\frac{5}{7}\frac{6}{8}$

$= \frac{1 \cdot 2}{7 \cdot 8} = \frac{1}{7 \cdot 4} = \frac{1}{28}$