

Quick Review (4.1 - 4)

Name: Key

1. Give the **EXPLICIT** formula for an arithmetic sequence where $a_{14} = 10$ and $a_{32} = 66$. Then find a_{237} .

$$d = \frac{66 - 10}{32 - 14} = \frac{56}{18} = \frac{28}{9}$$

$$10 = a_1 + \frac{28}{9}(14 - 1)$$

$$10 = a_1 + \frac{28}{9}(13)$$

$$10 = a_1 + \frac{364}{9}$$

$$-\frac{364}{9}$$

$$-\frac{364}{9}$$

$$a_1 = \frac{-274}{9}$$

$$a_n = -\frac{274}{9} + \frac{28}{9}(n-1)$$

$$a_n = \frac{28}{9}n - \frac{302}{9}$$

$$a_{237} = \frac{28}{9}(237) - \frac{302}{9}$$

$$= \frac{6334}{9}$$

2. Find S_{47} for the sequence below.

{13, 21, 29, 37, 45, ...}

$$+8 \quad +8$$

$$a_n = 8n + 5$$

$$\sum_{n=1}^{47} 8n + 5 = \left(\frac{47}{2}\right)(13 + 381)$$

$$= \boxed{9259}$$

3. Evaluate $\sum_{n=1}^{42} 3n - 4$. Box your final answer.

$$\sum_{n=1}^{42} 3n - 4 = \left(\frac{42}{2}\right)(-1 + 122) = \boxed{2541}$$

4. Write the sequence in recursive and explicit notation.

a) {16, -8, 4, -2, 1, ...}

Recursive: $\begin{cases} a_1 = 16 \\ a_n = -\frac{1}{2}a_{n-1}; n > 1 \end{cases}$

Explicit: $a_n = 16\left(-\frac{1}{2}\right)^{n-1}$

b) {135, 90, 60, 40, ...}

Recursive: $\begin{cases} a_1 = 135 \\ a_n = \frac{2}{3}a_{n-1}; n > 1 \end{cases}$

Explicit: $a_n = 135\left(\frac{2}{3}\right)^{n-1}$

5. Write the series in sigma notation.

2, 10, 50, 250, ..., 31250

$$\sum_{n=1}^7 2(5)^{n-1}$$

$$\frac{2(5)^{n-1}}{5-2} = \frac{31250}{2}$$

$$5^{n-1} = 15625$$

$$5^6 = 15625 \text{ so } \underline{n=7}$$