

Algebra II
Sequence Quiz Review

Name _____

1. Write out the first 5 terms of the sequence whose n th term is given by a_n . Show work for a, use your calculator for b.

a. $a_n = 2 - \frac{1^n}{2}$

b. $a_n = \left(\frac{2^n}{3} - 4 \right) + n$

2. Write the formula for the n th term of the following arithmetic sequences. Then find the sum of the first 50 terms for a only.

a. -22, -29, -36, -43,

b. $a_4 = \frac{5}{4}$, $a_{20} = \frac{29}{4}$

3. Write the formula for the n th term of the following geometric sequences.

a. 3, -6, 12, -24,

b. $a_3 = \frac{1}{4}$, $a_6 = \frac{1}{256}$

4. Find the following sums. Show work for a, use your calculator for b.

a. $\sum_{n=2}^5 (6n - 7)$

b. $\sum_{n=1}^{50} 1 - \left(\frac{3}{4} \right)^n$

5. Find the sum of the first 100 terms of $11 + 15 + 19 + 23 + \dots$. Show work!

6. Find the sum of the first 10 terms of $\frac{1}{2} + 1 + 2 + 4 + \dots$. Show work!

Quiz Review

$$\begin{aligned} \textcircled{1a)} \quad 2 - \frac{1}{2}^1 &= 2 - \frac{1}{2} = \frac{3}{2} \\ 2 - \frac{1}{2}^2 &= 2 - \frac{1}{4} = \frac{7}{4} \\ 2 - \frac{1}{2}^3 &= 2 - \frac{1}{8} = \frac{15}{8} \\ 2 - \frac{1}{2}^4 &= 2 - \frac{1}{16} = \frac{31}{16} \\ 2 - \frac{1}{2}^5 &= 2 - \frac{1}{32} = \frac{63}{32} \end{aligned}$$

$$\textcircled{1b)} \quad -\frac{7}{3}, -\frac{14}{9}, -\frac{19}{27}, \frac{16}{81}, \frac{275}{243}$$

$$\begin{aligned} \text{2a.)} \quad a_n &= -22 + (n-1)(-7) \\ a_n &= -7n - 15 \end{aligned}$$

$$\begin{aligned} S_{50} &= \frac{50(-22 + a_{50})}{2} \quad \rightarrow \quad a_{50} = -7(50) - 15 = -365 \\ \frac{50(-22 + -365)}{2} &= -9675 \end{aligned}$$

$$\textcircled{2b)} \quad (4, \frac{5}{4}) (20, \frac{29}{4})$$

$$m = \frac{\frac{29}{4} - \frac{5}{4}}{20 - 4} = \frac{\frac{24}{4}}{16} = \frac{6}{16} = \frac{3}{8}$$

$$y - \frac{5}{4} = \frac{3}{8}(x - 4)$$

$$y - \frac{5}{4} = \frac{3}{8}x - \frac{3}{2}$$

$+\frac{5}{4}$

$+\frac{5}{4}$

$$y = \frac{3}{8}x - \frac{1}{4}$$

$$a_n = \frac{3}{8}n - \frac{1}{4}$$

$$3a.) a_n = 3(-2)^{n-1}$$

$$b.) \begin{array}{ccccccc} 4 & \frac{1}{2} & \frac{1}{4} & - & - & \frac{1}{256} & \rightarrow & \frac{1}{4} r^3 = \frac{1}{256} \\ 1 & 2 & 3 & 4 & 5 & & & \\ \div \frac{1}{4} & \div \frac{1}{4} & & & & & & \\ & & & & & & & r^3 = \frac{1}{64} \\ & & & & & & & r = \frac{1}{4} \end{array}$$

$$a_n = 4\left(\frac{1}{4}\right)^{n-1}$$

$$4a.) \begin{array}{cccc} [6(2)-7] & + & [6(3)-7] & + & [6(4)-7] & + & [6(5)-7] \\ 5 & + & 11 & + & 17 & + & 23 \\ & & & & 56 & & \end{array}$$

$$b.) 47$$

$$5.) \text{ arithmetic } S_{100} = \frac{100(11 + a_{100})}{2} \quad a_{50} = 11 + (100-1)(4) = 407$$

$$S_{100} = \frac{100(11 + 407)}{2} = 20,900$$

$$6.) \text{ geometric } S_{10} = \frac{\frac{1}{2}(1-2^{10})}{1-2} = \frac{1023}{2} = 511.5$$