Chaparral High School
Algebra II Review for Exam
Sequences, Series, and Systems of Equations

This is a 50 minute exam to be completed without the aid of calculators. Please show all appropriate work and place answers in lowest terms. Please work independently. This exam will be scaled to 100 points. Good Luck!

1) **Section 9.1** (6 points) Write the series represented by the summation notation given below. Then evaluate the sum.

$$\sum_{n=2}^{6} \frac{3n}{2\,(n-1)}$$

2) **Section 9.2** (5 points) Find the 12th term of the arithmetic sequence if the eighth term is 12 and the 23rd term is 50.

3) **Section 9.4** (5 points) Find the sum of the first 25 terms of the arithemetic sequence given below.

$$3, 7, 11, 15, ...$$

4) **Section 9.4** (5 points) Find the sum of the arithmetic series given below.

$$\frac{1}{3} + \frac{2}{3} + 1 + \frac{4}{3} + \cdots + 22$$

5) **Section 9.1/9.4** (5 points) Find the sum of the first 5 terms of the recursive sequence given by $a_n = 2a_{n-1} + 3$ with $a_1 = -2$.

6) **Section 9.3** (5 points) Find the 12th term of the geometric sequence if the eighth term is 12 and the fifth term is $\frac{32}{9}$.

7) **Section 9.5** (5 points) Evaluate the sum of the finite Geometric Series given below.

$$\sum_{n=1}^{6} 3\,(4)^{n-1}$$

8) **Section 9.5** (5 points) Find the sum of the infinite Geometric Series given below.

$$\sum_{n=1}^{\infty} -\frac{1}{6}\left(-\frac{1}{2}\right)^{n-1}$$

This series may also be represented as

$$-\frac{1}{6} + \frac{1}{12} - \frac{1}{24} + \frac{1}{48} - \frac{1}{96} + \cdots$$

9) **Section 9.5** (5 points) Find the sum of the 11 terms in the geometric series given below.

$$-\frac{8}{3} + \frac{4}{3} - \frac{2}{3} + \frac{1}{3} - \frac{1}{6} + \frac{1}{12} - \cdots - \frac{1}{384}$$

10) **Section 3.1** (6 points) Solve the following system of equations by using the **Graphing Method**.

$$\begin{aligned} 3x - 4y &= 24 \\ 3x + 2y &= 6 \end{aligned}$$

11) **Section 3.2** (6 points) Solve the following system of equations by using the **Method of Substitution**.

$$\begin{aligned} 6x - 8y &= 6 \\ -3x + 2y &= -2 \end{aligned}$$

12) **Section 3.2** (6 points) Solve the following system of equations by using the **Method of Elimination**.

$$\begin{aligned} 3x - 2y &= 22 \\ -5x + 6y &= -36 \end{aligned}$$

13) **Section 3.5** (8 points) Solve the following system of equations.

$$\begin{aligned} 3x + 3y + 5z &= 1 \\ 3x + 5y + 9z &= 0 \\ 5x + 9y + 17z &= 0 \end{aligned}$$