

# Algebra 2

## 11-Review

**Take this test as you would take a test in class. When you are finished, check your work against the answers.**

### 11-02 to 11-03

**Tell whether the sequence is arithmetic, geometric, or neither.**

1. 4, 9, 14, 19, 24
2. 10, 20, 40, 80, 160
3. 1, 2, 6, 24, 120

**Write the first four terms of the sequence.**

4.  $a_n = 3n + 2$
5.  $a_n = 2n^2 + 1$
6.  $a_1 = 3, a_n = 5(a_{n-1})$

**Write the next term of the sequence, and then write the explicit rule for the  $n$ th term.**

7. 15, 17, 19, 21, ...
8. 2, 6, 18, 54, ...
9.  $\frac{1}{3}, \frac{3}{4}, \frac{5}{5}, \frac{7}{6}, \dots$

**Find the sum of the series. (Show work.)**

10.  $\sum_{i=1}^{100} 2i + 1$

12.  $\sum_{i=1}^3 i^2$

11.  $\sum_{i=1}^{20} 2\left(\frac{1}{3}\right)^{i-1}$

13.  $\sum_{i=2}^5 i!$

### 11-04

14.  $\sum_{i=1}^{\infty} 3\left(\frac{1}{2}\right)^{i-1}$

**Write the repeating decimal as a fraction in lowest terms. (Show work.)**

15. 0.8787878787...
16. 1.23123123123...

### 11-05

**Write a recursive rule for the sequence.**

17. 12, 19, 26, 33, 40, ...
18. 10, 30, 90, 270, ...
19. 3, 4, 7, 11, 18, 29, ...

**Word Problems.**

20. (11-03) The value of a certain car is 85% of the previous year's value each year. The value of the car after the first year is \$15,000. Find the explicit rule for the value of the car after  $n$  years. What is the value of the car after the 7<sup>th</sup> year?
21. (11-04) A company had a profit of \$350,000 in its first year. Since then, the company's profit has decreased by 12% per year. If this trend continues, what is an upper limit on the total profit the company can make over the course of its lifetime?

**Answers**

1. Arithmetic
2. Geometric
3. Neither
4. 5, 8, 11, 14
5. 3, 9, 19, 33
6. 3, 15, 75, 375
7.  $23; a_n = 2n + 13$
8.  $162; a_n = 2(3)^{n-1}$
9.  $\frac{9}{7}; a_n = \frac{2n-1}{n+2}$
10. 10200
11. 3
12. 14
13. 152
14. 6
15.  $\frac{29}{33}$
16.  $\frac{410}{333}$
17.  $a_1 = 12, a_n = a_{n-1} + 7$
18.  $a_1 = 10, a_n = 3a_{n-1}$
19.  $a_1 = 3, a_2 = 4, a_n = a_{n-1} + a_{n-2}$
20.  $a_n = 15000(0.85)^{n-1}; \$5657.24$
21. \$2,916,666.67