**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**11-5 Recursively Defined Sequences**

**Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Block\_\_\_\_\_\_\_\_**

1. **Write the RECURSIVE RULE for each type of sequence.**

**Arithmetic Sequence: Geometric Sequence:**

**What is the difference between a recursive rule and recursive formula?**

**B. Write the first six terms of each sequence, starting with a1.**

**1.)** a1 = -18 **2.)** a1 = 0.5

an = an – 1 + 6, where n > 2 an = 3an – 1, where n > 2

**3.)** a1 = 35.6 **4.)** a1 = 8

an = an – 1 – 4.2, where n > 2 an = -0.5an – 1, where n > 2

**5.)** a1 = 5 **6.)** a1 = -2

an = 3an – 1 – 1, where n > 2 an = 2an – 1 + 4, where n > 2

**C. Determine the pattern and write the next term for each of the following sequences. State whether each pattern is arithmetic, geometric, or neither. Write a recursive rule to generate each sequence that is arithmetic or geometric. Find the 8th term of each sequence.**

**Sequence Next term Type of Sequence Recursive Rule 8th Term**

**1.)** 3, 6, 12, 24, . . . **\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_**

**2.)** 3, 7, 11, 15, . . . **\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_**

**3.)** 3, -2, -7, -12, . . . **\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_**

**4.)** 16, 4, 1, ¼, ….. **\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_**

**D. Write a recursive formula for each of the following sequences. Find the 15th term of each sequence.**

**Sequence Recursive Formula 15th Term**

**1.)** 3, 6, 12, 24, . . . **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_**

**2.)** 3, 7, 11, 15, . . . **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_**

**3.)** 3, -2, -7, -12, . . . **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_**

**4.)** 16, 4, 1, ¼, ….. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ omit\_\_\_\_**

**E. Graph each sequence in problems 1 – 4 on the first page. Complete each table as shown in problem 1.**

**1.)** 3, 6, 12, 24, . . **2.)** 3, 7, 11, 15, . . . **­­­**

**x y**

**1 3**

**2 6**

**3 12**

**4 24**

**5 48**

**3.)** 3, -2, -7, -12, . . . **4.)** 16, 4, 1, ¼, …..

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