8F MORE Sequences

Name: _____ Per: _____
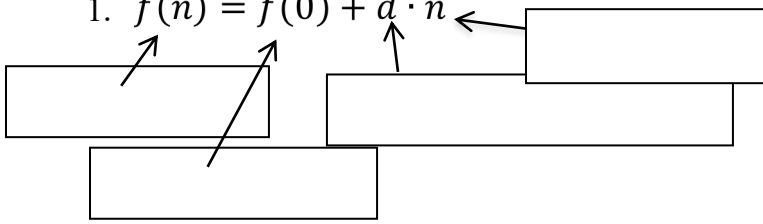
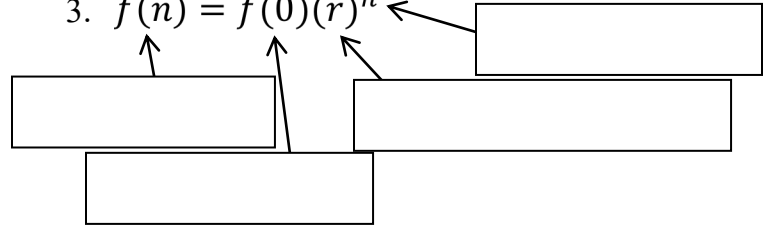PLEASE SHOW YOUR WORK. WORK IN PENCIL

Due Date: February 7th / February 8th

Fill in the boxes to label the following parts of arithmetic and geometric explicit and recursive formulas.
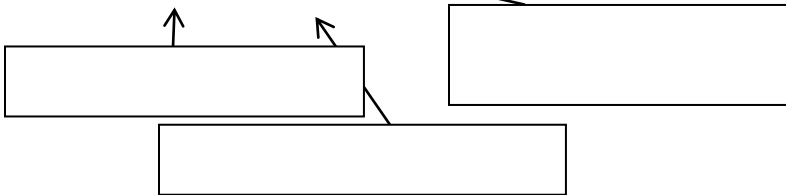
1. $f(n) = f(0) + d \cdot n$

   [ ]   [ ]   [ ]   [ ]

   Circle: Geometric/Arithmetic
   Circle: Recursive/Explicit

3. $f(n) = f(0)(r)^n$

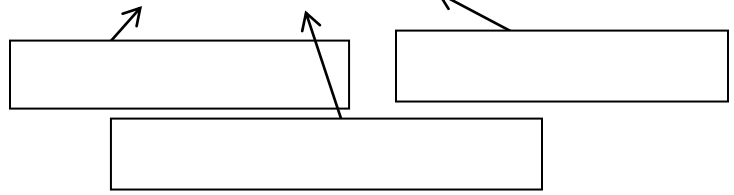   [ ]   [ ]   [ ]   [ ]

   Circle: Geometric/Arithmetic
   Circle: Recursive/Explicit

2. $f(n) = f(n-1)r$

   [ ]   [ ]   [ ]

   Circle: Geometric/Arithmetic
   Circle: Recursive/Explicit

4. $f(n) = f(n-1) + d$

   [ ]   [ ]   [ ]

   Circle: Geometric/Arithmetic
   Circle: Recursive/Explicit

Find the missing terms for each sequence. Circle if it's a common difference OR common ratio and find it. Write recursive and explicit equation based on the given term.

5.   5, 11, _____, 23, 29, _____   D or R _____

   $f(2) = 5$ Recursive Eq: _____

   Explicit Equation: _____

6.   7, 3, –1, _____, _____, –13 D or R _____

   $f(2) = 7$ Recursive Eq: _____

   Explicit Equation: _____

7.   20, 10, _____, 2.5, _____   D or R _____

   $f(1) = 20$ Recursive Eq: _____

   Explicit Equation: _____

8.   2, 6, 18, _____, 162   D or R _____

   $f(-1) = 2$ Recursive Eq: _____

   Explicit Equation: _____

9.   5, _____, 15, _____, 25   D or R _____

   $f(1) = 15$ Recursive Eq: _____

   Explicit Equation: _____

10.   10, _____, 40, –80, _____   D or R _____

   $f(3) = 10$ Recursive Eq: _____

   Explicit Equation: _____

Use the two consecutive terms in an <u>Arithmetic sequence</u> to find the common difference. Find the two terms asked. Then write the recursive and explicit equations.

11. If $f(1) = 5$ and $f(2) = 8$, $d =$ _____

    find $f(5) =$ _____ and $f(6) =$ _____

    Recursive: _____

    Explicit: _____

12. If $f(2) = 3.7$ and $f(3) = 8.7$, $d =$ _____

    find $f(5) =$ _____ and $f(6) =$ _____

    Recursive: _____

    Explicit: _____

Use the two consecutive terms in a <u>Geometric sequence</u> to find the common ratio. Find the two terms asked. Then write the recursive and explicit equations.

13. If $f(1) = 30$ and $f(2) = 15$, $r =$ _____

    find $f(4) =$ _____ and $f(5) =$ _____

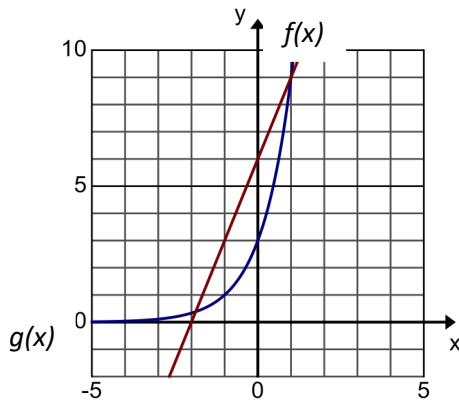   Recursive: _____

    Explicit: _____

14. If $f(0) = 2.5$ and $f(1) = 7.5$, $r =$ _____

    find $f(3) =$ _____ and $f(4) =$ _____

    Recursive: _____

    Explicit: _____

15. **Given the following graph, make a table (at least 3 values). Write the explicit and recursive.**

a. $f(x)$	b. $g(x)$
Recursive:	Recursive:
Explicit:	Explicit:

16. Karen borrowed $16,000 from the bank to buy a car. The loan is a **5% interest compound yearly**.
    a. What will be the common ratio / multiplier? _____
    b. Write a recursive equation to represent the loan. _____
    c. Write an explicit equation to represent the loan. _____
    d. If she doesn't make any payments for 5 years, what will be the balance of the loan. _____

17. Karen had another bank offer her a **6% SIMPLE interest** yearly rate for the $16,000 to buy her car.
    a. What will be the common difference? _____
    b. Write a recursive equation to represent the loan. _____
    c. Write an explicit equation to represent the loan. _____
    d. If she doesn't make any payments for 5 years, what will be the balance of the loan. _____

18. Which option will be the better deal, if Karen isn't going to make a payment for five years? Explain:

19. Karen's car will depreciate in value over time and **decay** at a rate of **4% compound each year**
    a. What will be the common ratio / multiplier? _____
    b. Write a recursive equation to represent the value of the car. _____
    c. Write an explicit equation to represent the value of the car. _____
    d. What will be the value of the car after 5 years? _____ What about after 20 years? _____