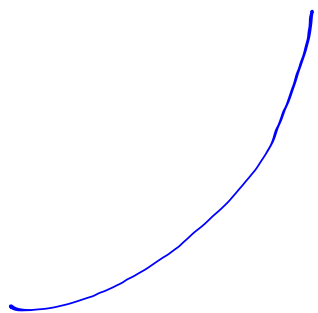


No opener today

Take out your **BLUE** homework 9.3

We will correct it and then take a quiz :)



$$\div 3 \cdot \frac{1}{3}$$

$i(x)$	x	$i(x)$
	-1	5
	0	25
	1	125

$$\frac{5}{2} = 2.5$$

$$\frac{2.5}{5} = \frac{5}{4} \quad 2 \div 2.5$$

$$\rightarrow i(x) = i(x-1) \cdot \frac{5}{2}$$

$$i(x) = 2 \cdot \left(\frac{5}{2}\right)^x$$

$$5 \cdot \frac{5}{2}^{x-1} \quad 2 \cdot \frac{5}{2}^x$$

$$f(5)$$

$$f(x) = f(x-1) \cdot \frac{5}{2}$$

$$f(x) = f(x-1) + 5$$

$$f(x) = 5(x-100) + 245$$

$$5x - 500 + 245$$

$$5x - 255$$

9.3H Equations from Sequences
SHOW YOUR WORK. WORK IN PENCIL

Name: _____ Per: _____

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

1. 5, 11, 17, 23, 29, 35 (D or R) +6
 f(2) = 5 Recursive Eq: $f(x) = f(x-1) + 6$
 Explicit Equation: $f(x) = 6x - 7$
2. 7, 3, -1, -5, -9, -13 (D or R) -4
 f(2) = 7 Recursive Eq: $f(x) = f(x-1) - 4$
 Explicit Equation: $f(x) = -4x + 15$
3. 20, 10, 5, 2.5, 1.25 (D or R) 1/2
 f(1) = 20 Recursive Eq: $f(x) = f(x-1) \cdot \frac{1}{2}$
 Explicit Equation: $f(x) = 20 \cdot \left(\frac{1}{2}\right)^{x-1}$
4. 2, 6, 18, 54, 162 (D or R) 3
 f(-1) = 2 Recursive Eq: $f(x) = f(x-1) \cdot 3$
 Explicit Equation: $f(x) = 18 \cdot 3^{x-1}$
5. 5, 10, 15, 20, 25 (D or R) +5
 f(1) = 15 Recursive Eq: $f(x) = f(x-1) + 5$
 Explicit Equation: $f(x) = 5x + 10$
6. 10, 20, 40, -80, 160 (D or R) -2
 f(3) = 10 Recursive Eq: $f(x) = f(x-1) \cdot -2$
 Explicit Equation: $f(x) = 2.5 \cdot (-2)^{x-1}$

Use the two consecutive terms in an **arithmetic sequence** to find the common difference. Find the two given terms. Then write the **recursive** and **explicit** equations.

7. If f(3) = 5 and f(4) = 8, d = 3
 find f(5) = 11 and f(6) = 14
 Recursive: $f(x) = f(x-1) + 3$
 Explicit: $f(x) = 3x - 4$
8. If f(2) = 20 and f(3) = 12, d = -8
 find f(4) = 4 and f(5) = -4
 Recursive: $f(x) = f(x-1) - 8$
 Explicit: $f(x) = -8x + 36$
9. If f(5) = 3.7 and f(6) = 8.7, d = 5
 find f(11) = 33.7 and f(12) = 38.7
 Recursive: $f(x) = f(x-1) + 5$
 Explicit: $f(x) = 5x - 21.3$
10. If f(100) = 245 and f(101) = 250, d = 5
 find f(5) = -230 and f(12) = -195
 Recursive: $f(x) = f(x-1) + 5$
 Explicit: $f(x) = 5x - 255$

Find each value of the given sequence and then write the recursive equation.

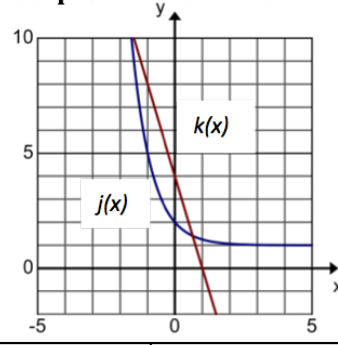
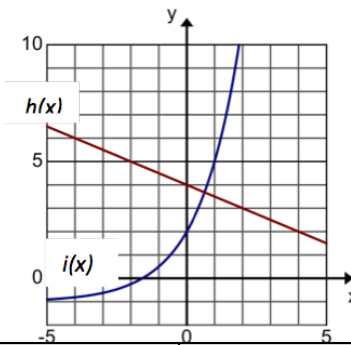
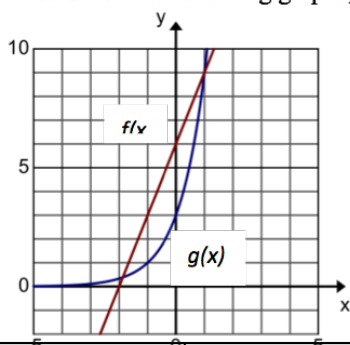
11. $f(n) = 2^{n-1}$, find f(3) = 4, f(6) = 32
 Recursive: $f(x) = f(x-1) \cdot 2$
12. $f(n) = (-2)^n$, find f(3) = -8, f(6) = 64
 Recursive: $f(x) = f(x-1) \cdot -2$
13. $f(n) = 3 + 4(n-1)$, find f(5) = 19, f(6) = 23
 Recursive: $f(n) = f(n-1) + 4$
14. If $3^3 = 27$, and $3^2 = 9$, and $3^1 = 3$, and $3^0 = 1$, what is $3^{1/2} =$ $\sqrt{3}$

In each situation below, find the **rate of change**. Which has the greatest rate of change? **Explain**

15. A sunflower that grows 2 inches every day or an amaryllis that grows 18 inches in one week.

16. Pumping 25 gallons of gas into a truck in 3 minutes or filling a bathtub with 40 gallons of water in 5 minutes.

17. Given the following graphs, make a table of at least 3 values. Write the explicit and recursive.



a. $f(x)$	b. $g(x)$	c. $h(x)$	d. $i(x)$	e. $j(x)$	f. $k(x)$
Recursive:	Recursive:	Recursive:	Recursive:	Recursive:	Recursive:
Explicit:	Explicit:	Explicit:	Explicit:	Explicit:	Explicit:

18. Mr. Peters, an English teacher, has a 10% off late paper policy. This means that for each day that an assignment is late a student receives 90% of the credit he or she would have received the day before.

- Make a table (at least three values) to show the potential credit that can be earned.
- After how many days would your score for a late assignment drop below 50%? _____
- According to his policy, would your score ever reach 0? _____ Explain. _____
- To represent the situation, write a recursive equation: _____ and explicit equation: _____

Interest

Simple vs Compound

\$200

6%

\$12

$200 \cdot .06$

x	f(x)
0	200
1	212
2	224
3	236

$f(x) = f(x-1) + 12$

$f(x) = 12x + 200$

\$3000

24%

x	f(x)
0	3000
1	3720
2	4613
3	5720

$f(x) = f(x-1) \cdot 1.24$

$f(x) = 3000 \cdot 1.24^x$
 $f(5) = 8794$

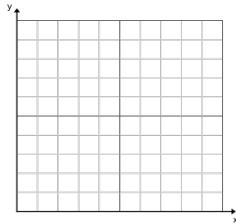
U9H Quiz, Sequences

Name: _____ Per: _____ Score: _____

Complete the following for each sequence. **First given term is $f(2)$**

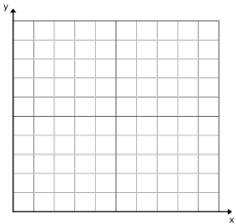
2, 10, 50, 250, . . .

1. Circle: Arithmetic OR Geometric
2. Common difference/common ratio _____
3. Recursive equation: _____
4. Explicit equation: _____
5. Graph the sequence
(make a table if needed)



33, 27, 21, 15, . . .

6. Circle: Arithmetic OR Geometric
7. Common difference/common ratio _____
8. Recursive equation: _____
9. Explicit equation: _____
10. Graph the sequence
(make a table if needed)



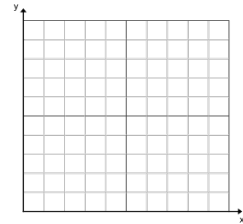
U9H Quiz, Sequences

Name: _____ Per: _____ Score: _____

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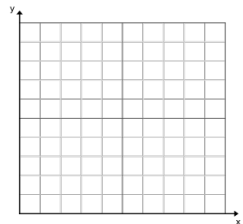
2, 10, 50, 250, . . .

1. Circle: Arithmetic OR Geometric
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33, 27, 21, 15, . . .

6. Circle: Arithmetic OR Geometric
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8. Recursive equation: _____
9. Explicit equation: _____
10. Graph the sequence
(make a table if needed)



INTEREST VS

Simple

Compound

\$200 4%
\$8

x	f(x)
0	200
1	208
2	216

$$f(x) = f(x-1) + 8$$

$$f(x) = 8x + 200$$

200 4%

x	PAID	f(x)
0	200 ·	200
1	200 · 1.04	208
2	200 · 1.04 · 1.04	216.32
3	200 · 1.04 · 1.04 · 1.04	224.97

$$f(x) = f(x-1) \cdot 1.04$$

$$f(x) = 200 \cdot 1.04^x$$