SECONDARY MATH I // MODULE 2

LINEAR & EXPONENTIAL FUNCTIONS – 2.4

2.4

| READY, SET, GO! | Name | | Period | Date |

READY

Topic: Comparing arithmetic and geometric sequences.

The first and fifth terms of a sequence are given. Fill in the missing numbers if it is an arithmetic sequence. Then fill in the numbers if it is a geometric sequence.

Example:

		+80	+80	+80	+80	
Arithmetic	4		84	164	244	324
Geometric	4		12	36	108	324

× 3   × 3   × 3   × 3

1.

Arithmetic	3	14.25	25.5	36.75	48
Geometric	3	6	12	24	48

2.

Arithmetic	-6250	-4690	-3130	-1570	-10
Geometric	-6250	-1250	-250	-50	-10

3.

Arithmetic	-12	-9.1875	-6.375	-3.5625	-0.75
Geometric	-12	-6	-3	-1.5	-0.75

SET

Topic: Distinguishing specifics between sequences and linear or exponential functions.

Answer the questions below with respect to the relationship between sequences and the larger families of functions.

4. If a relationship is modeled with a <u>continuous</u> function which of the domain choices is a possibility?

  A. $\{x \mid x \in R, x \geq 0\}$ B. $\{x \mid x \in W\}$ C. $\{x \mid x \in Z, x \geq 0\}$ D. $\{x \mid x \in N\}$

5. Which one of the options below is the mathematical way to represent the Natural Numbers?

  A. $\{x \mid x \in R, x \geq 0\}$ B. $\{x \mid x \in Q, x \geq 0\}$ C. $\{x \mid x \in Z, x \geq 0\}$ D. $\{x \mid x \in N\}$

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6. Only one of the choices below would be used for a <u>continuous exponential</u> model, which one is it?
   A. $f(x) = f(x-1) \cdot 4, f(1) = 3$ B. $g(x) = 4^x(5)$ *(circled)*

   C. $h(t) = 3t - 5$ D. $k(n) = k(n-1) - 5, k(1) = 32$

7. Only one of the choices below would be used for a <u>continuous linear</u> model, which one is it?
   A. $f(x) = f(x-1) \cdot 4, f(1) = 3$ B. $g(x) = 4^x(5)$

   C. $h(t) = 3t - 5$ *(circled)*   D. $k(n) = k(n-1) - 5, k(1) = 32$

8. What domain choice would be most appropriate for an arithmetic or geometric sequence?
   A. $\{x \mid x \in R, x \geq 0\}$ B. $\{x \mid x \in Q, x \geq 0\}$ C. $\{x \mid x \in Z, x \geq 0\}$ D. $\{x \mid x \in N\}$ *(circled)*

9. What attributes will arithmetic or geometric sequences always have?
   (There could be more than one correct choice. Circle all that apply.)

   A. Continuous   B. Discrete *(circled)*   C. Domain: $\{x \mid x \in N\}$ *(circled)*   D. Domain: $\{x \mid x \in R\}$

   E. Negative x-values   F. Something constant *(circled)*   G. Recursive Rule *(circled)*

10. What type of sequence fits with linear mathematical models?

    (handwritten: Arithmetic)

    What is the difference between this sequence type and the overarching umbrella of linear relationships? (Use words like discrete, continuous, domain and so forth in your response.)

    (handwritten: Arithmetic Sequences are a specific type of linear relationship that are discrete and have a domain in the natural numbers.)

11. What type of sequence fits with exponential mathematical models?

    (handwritten: Geometric)

    What is the difference between this sequence type and the overarching umbrella of exponential relationships? (Use words like discrete, continuous, domain and so forth in your response.)

    (handwritten: Geometric Sequences are a specific type of exponential relationship that are discrete and have a domain in the natural numbers.)

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GO

Topic: Writing explicit equations for linear and exponential models.

Write the explicit equations for the tables and graphs below. This is something you really need to know. Persevere and do all you can to figure them out. Remember the tools we have used.

(#21 is bonus give it a try.)

12.

x	f(x)
2	-4
3	-11
4	-18
5	-25

$f(x) = -7(x-1)+3$

13.

x	f(x)
-1	2/5
0	2
1	10
2	50

$f(x) = 2(5)^x$

14.

x	f(x)
2	-24
3	-48
4	-96
5	-192

$f(x) = -24(2)^{x-2}$

15.

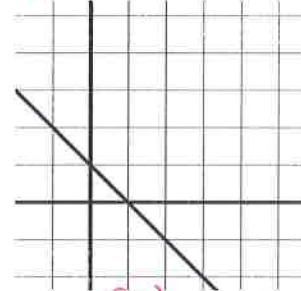| x	f(x)
-4	81
-3	27
-2	9
-1	3

$f(x) = \frac{1^x}{3}$

16
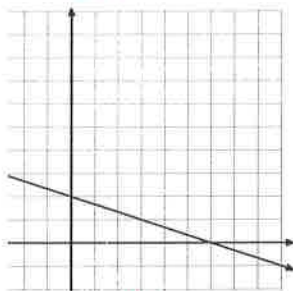
$f(x) = -\frac{1}{3}x + 2$

17.
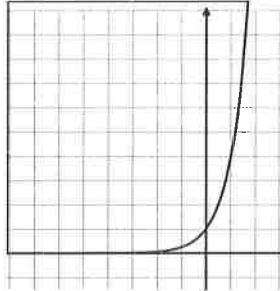
$f(x) = 4^x$

18
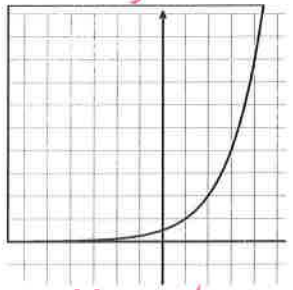

$f(x) = -x + 1$

19.
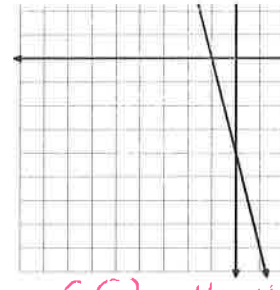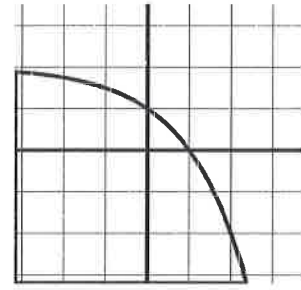

$f(x) = 2^{x-1}$

20.

$f(x) = -4x - 4$

21.

$f(x) = -2^x + 2$