

* Algebra Sequence Test Review

Name: Key

Period: _____

Given the following formulas, find the first 4 terms.

1. $t_1 = 0$

$$t_{n+1} = t_n - 8$$

0, -8, -16, -24

2. $t_1 = -4$

$$t_{n+1} = t_n + 4$$

-4, 0, 4, 8

3. $t_1 = 8$

$$t_{n+1} = t_n - 2$$

8, 6, 4, 2

4. $t_n = 4n - 5$

-1, 3, 7, 11

5. $t_n = 3n + 1$

4, 7, 10, 13

6. $t_n = -6n + 4$

-2, -8, -14, -20

7. Write an explicit and recursive formula for the following sequences.

a. -2, -4, -6, -8...

Explicit: $t(n) = -2n$

Recursive: $t(1) = -2$

$t(n+1) = t(n) - 2$

b. 96, 85, 74, 63...

Explicit: $t(n) = -11n + 107$

Recursive: $t(1) = 96$

$t(n+1) = t(n) - 11$

c. 20, 13, 6, -1...

Explicit: $t(n) = -7n + 27$

Recursive: $t(1) = 20$

$t(n+1) = t(n) - 7$

d. 6, 23, 40, 57...

Explicit: $t(n) = 17n - 11$

Recursive: $t(1) = 6$

$t(n+1) = t(n) + 17$

e. 14, 28, 56, 112....

Geometric: $t(n) = 7 * 2^n$

f. 30, 45, 67.5....

Geometric: $t(n) = 20 * 1.5^n$

Given the recursive formula, write the explicit formula for the sequence.

8. $t_1 = 0$
 $t_{n+1} = t_n + 7$

$t(n) = 7n - 7$

9. $t_1 = 8$
 $t_{n+1} = t_n - 3$

$t(n) = -3n + 11$

Given the explicit formula, write the recursive formula for the sequence.

10. $t_n = 4n - 2$

$t(1) = 2$
 $t(n+1) = t(n) + 4$

11. $t_n = -6n + 1$

$t(1) = -5$
 $t(n+1) = t(n) - 6$

12. Write equations to solve each of the following problems

$y = 35500(.8)$

a. When Mr. Franklin bought his new car, it cost \$35,500. Each year it lost 20% of its value. What will Franklin's car be worth in 15 years?

b. Each year the population in Douglas County increases by 15%. The population is currently 306,000. What will the population be in 20 years?

a. equation: $y = 35500 \cdot .8^x$

cars value in 15 years: $\rightarrow \$1,249$

b. equation: $y = 306000(1.15)^x$

population in 20 years: $\rightarrow 500,816$

13. Use the given information to find an equation of the line.

a. Slope = 5, through (3, 13). $y = 5x + b$
 $13 = 5(3) + b$
 $b = -2$

$y = 5x - 2$

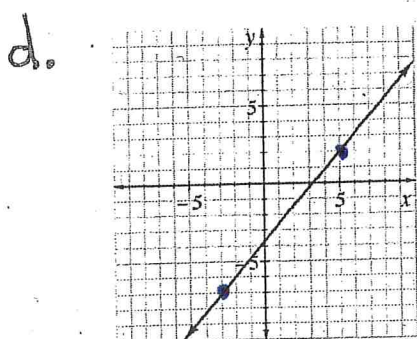
b. Passing through (1, 3) and (-5, -15). $y = 3x + b$
 $3 = 3(1) + b$
 $b = 0$

$y = 3x$

$M = \frac{11-7}{3-5} = \frac{4}{-2} = -2$

x	5	3	0	1	2
y	7	11	2	5	8

c. $y = -2x + 2$



d. $y = \frac{9}{8}x - \frac{29}{8}$

$(-3, -7)(5, 2)$

$m = \frac{2+7}{5+3} = \frac{9}{8}$

$y = \frac{9}{8}x + b$

$2 = \frac{9}{8}(\frac{5}{1}) + b$

$2 = \frac{45}{8} + b$

$\frac{16}{8} = \frac{45}{8} + b$

$b = -\frac{29}{8}$