

WS PC #1 Sequence Review

Key

Find the explicit formula and the recursive formula.

1) 21, 121, 221, 321, ...
+100 +100 +100

$a_1 = 21 \quad d = 100$

$$\begin{aligned} a_1 &= 21 \\ a_n &= a_{n-1} + 100 \end{aligned}$$

$$a_n = 21 + (n-1)100$$

$$a_n = 21 + 100n - 100$$

$$a_n = 100n - 79$$

2) -8, 92, 192, 292, ...
+100 +100 +100

$a_1 = -8 \quad d = 100$

$$\begin{aligned} a_1 &= -8 \\ a_n &= a_{n-1} + 100 \end{aligned}$$

$$a_n = -8 + (n-1)100$$

$$= -8 + 100n - 100$$

$$a_n = 100n - 108$$

3) 32, 62, 92, 122, ...
+30 +30 +30

$a_1 = 32 \quad d = 30$

$$\begin{aligned} a_1 &= 32 \\ a_n &= a_{n-1} + 30 \end{aligned}$$

$$a_n = 32 + (n-1)30$$

$$= 32 + 30n - 30$$

$$a_n = 30n + 2$$

4) -36, -46, -56, -66, ...
-10 -10 -10

$a_1 = -36 \quad d = -10$

$$\begin{aligned} a_1 &= -36 \\ a_n &= a_{n-1} - 10 \end{aligned}$$

$$a_n = -36 + (n-1)(-10)$$

$$= -36 - 10n + 10$$

$$a_n = -10n - 26$$

5) -2, 4, -8, 16, ...
 $\times 2 \times 2 \times 2$

$g_1 = -2 \quad r = -2$

$$g_n = -2(-2)^{n-1}$$

$g_1 = -2$

$$g_n = 2g_{n-1}$$

6) 2, 4, 8, 16, ...
 $\times 2 \times 2 \times 2$

$g_1 = 2 \quad r = 2$

$$g_n = 2(2)^{n-1}$$

$g_1 = 2$

$$g_n = 2g_{n-1}$$

7) 1, 2, 4, 8, ...
 $\times 2 \times 2 \times 2$

$g_1 = 1 \quad r = 2$

$$g_n = 1(2)^{n-1}$$

$g_1 = 1$

$$g_n = 2g_{n-1}$$

8) 2, -6, 18, -54, ...
 $\times -3 \times -3 \times -3$

$g_1 = 2 \quad r = -3$

$$g_n = 2(-3)^{n-1}$$

$g_1 = 2$

$$g_n = -3g_{n-1}$$

Given the explicit formula for an arithmetic sequence find the 52nd term.

9) $a_n = 73 - 100n$

$a_{52} = 73 - 100(52)$

$a_{52} = -5127$

10) $a_n = 105 - 100n$

$a_{52} = 105 - 100(52)$

$a_{52} = -5095$

Find the missing term in the sequence.

Given the recursive formula for an arithmetic sequence find the 52nd term.

~~11) $a_n = a_{n-1} - 100$
 $a_1 = -27$~~

3, 6, 9, 12, 15, 18, ...

~~12) $a_n = a_{n-1} + 10$
 $a_1 = -6$~~

-1, 4, -16, 64, -256

Given the explicit formula for a geometric sequence find the 8th term.

13) $a_n = 3 \cdot (-5)^{n-1}$

$g_n = 3(-5)^{n-1}$

$g_8 = 3(-5)^{8-1}$

$g_8 = 3(-5)^7$

$g_8 = -234375$

14) $a_n = -3 \cdot 6^{n-1}$

$g_n = -3(6)^{n-1}$

$g_8 = -3(6)^{8-1}$

$g_8 = -3(6)^7$

$g_8 = -839808$

Given the recursive formula for a geometric sequence find the 8th term. 2nd + 3rd term.

15) $a_n = a_{n-1} \cdot 2$
 $a_1 = -1$

$g_2 = g_1 \cdot 2$

$g_2 = -1 \cdot 2$

$g_2 = -2$

$g_3 = g_2 \cdot 2$

$g_3 = -2 \cdot 2$

$g_3 = -4$

16) $a_n = a_{n-1} \cdot 4$
 $a_1 = 3$

$g_2 = g_1 \cdot 4$

$g_2 = 3 \cdot 4$

$g_2 = 12$

$g_3 = g_2 \cdot 4$

$g_3 = 12 \cdot 4$

$g_3 = 48$