

HOMEWORK (LESSON 12.2)

4.

n	0	1	2	3	4
f(n)	0.1	0.3	0.9	2.7	8.1

Common ratio : $\frac{0.3}{0.1} = 3$

Recursive : $f(0) = 0.1, f(n) = 3 f(n-1), n > 0$

Explicit : $f(n) = 0.1 (3)^n$

6.

n	1	2	3	4	5
f(n)	1000	100	10	1	0.1

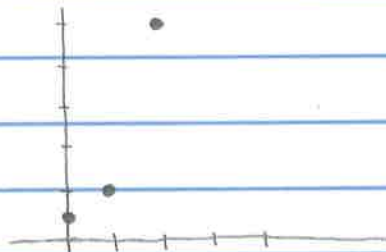
Common ratio : $\frac{100}{1000} = \frac{1}{10}$

Recursive : $f(1) = 1000, f(n) = \frac{1}{10} f(n-1), n > 1$

Explicit : $f(n) = 1000 \left(\frac{1}{10}\right)^{n-1}$

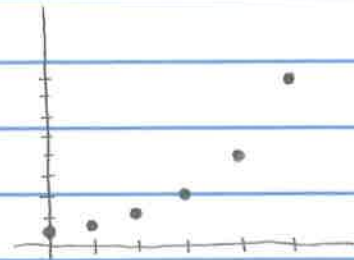
8. $f(n) = \left(\frac{1}{2}\right) \cdot 4^n, n \geq 0$

n	0	1	2	3	4
f(n)	$\frac{1}{2}$	2	8	32	128



9. $f(n) = 2 \cdot f(n-1), n \geq 1, f(0) = 0.5$

n	0	1	2	3	4	5
f(n)	$\frac{1}{2}$	1	2	4	8	16



12.

n	0	1	2	3	4
f(n)	1	2	4	8	16

Recursive: $f(0) = 1, f(n) = 2f(n-1), n > 0$ Explicit: $f(n) = 1(2)^{n-0}$

$$f(n) = 2^n$$

$$f(4) = 2^4$$

$$f(4) = 16$$

16 teams

13.

n	0	1	2	3
f(n)	1024	256	64	16

Recursive: $f(0) = 1024, f(n) = \frac{1}{4}f(n-1), n > 0$ Explicit: $f(n) = 1024\left(\frac{1}{4}\right)^n$

$$1 = 1024\left(\frac{1}{4}\right)^n$$

$$\frac{1}{1024} = \left(\frac{1}{4}\right)^n$$

$$4^{-5} = (4^{-1})^n$$

$$-5 = -n$$

$$n = 5$$

5 games

14.

Ⓐ.

n	0	1	2	3	4
f(n)	1	2	4	8	16

Recursive: $f(0) = 1, f(n) = 2f(n-1), n > 0$ Explicit: $f(n) = 1(2)^n$

$$f(6) = 2^6$$

$$f(12) = 2^{12}$$

$$f(6) = 64$$

$$f(12) = 4096$$

64 ancestors

4096 ancestors

Ⓑ.

n	1	2	3	4	5
f(n)	1	2	4	8	16

Explicit: $f(n) = 1(2)^{n-1}$

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