

EDDE. PROBLEM SET 8 (PREVIOUSLY 10)

1. Find the general form of sequences (a_n) satisfying the following equations:

a) $3a_{n+1} - 5a_n = 0$

b) $a_{n+2} = 6a_{n+1} - 8a_n$

c) $a_{n+2} = 6a_{n+1} - 5a_n$

d) $a_{n+2} = 6a_{n+1} - 9a_n$

e) $a_{n+2} = 6a_{n+1} - 10a_n$

f) $a_{n+2} = a_{n+1} + a_n$

g) $a_{n+2} = 2a_{n+1} - a_n$

h) $a_{n+2} = 2a_{n+1} - 2a_n$

2. Find the general form of sequences (a_n) satisfying the following equations:

a) $3a_{n+1} - 5a_n = 5^n - 3^n + 2^{n+1} - 4$

b) $a_{n+1} - a_n = n + 1$

c) $a_{n+1} - a_n = (n + 1)^2$

d) $a_{n+2} - 6a_{n+1} + 8a_n = 3^n + 1$

e) $a_{n+2} - 2a_{n+1} + a_n = 1$

f) $a_{n+2} = 6a_{n+1} - 5a_n + 1$

g) $a_{n+2} = a_{n+1} + a_n + 2^n$

h) $a_{n+2} - 2a_{n+1} + a_n = n$

3. Solve

a)

$$\begin{cases} a_{n+2} & = a_{n+1} + a_n \\ a_1 = a_2 & = 1 \end{cases}$$

b)

$$\begin{cases} a_{n+2} - 2a_{n+1} + a_n & = n \\ a_1 = a_2 & = 0 \end{cases}$$

c)

$$\begin{cases} a_{n+2} & = 2(a_{n+1} - a_n) \\ a_0 & = 0 \\ a_1 & = 1 \end{cases}$$