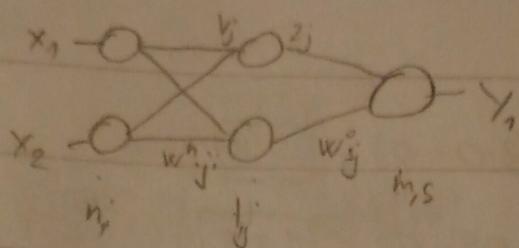


4)



NAND Tablica

x_1	x_2	y_1
0	0	1
0	1	1
1	0	1
1	1	0

$$W^{h(0)} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$W^{0(0)} = \begin{bmatrix} 0 & 0 \end{bmatrix}$$

$$\theta^{h(0)} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$\theta^{0(0)} = \begin{bmatrix} 0 \end{bmatrix}$$

$$x_0 = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \quad y_0 = \begin{bmatrix} 1 \end{bmatrix}$$

$$v_0 = W^{h(0)} \cdot x_0 - \theta^{h(0)} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \cdot \begin{bmatrix} 0 \\ 0 \end{bmatrix} - \begin{bmatrix} 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix} - \begin{bmatrix} 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$(Z_0 = \text{sigmoid}(v_0) = \frac{1}{1+e^{-v_0}} = \frac{1}{2} \quad Z_0 = \begin{bmatrix} 1/2 \\ 1/2 \end{bmatrix})$$

$$v_0 = W^{0(0)} \cdot Z - \theta^{0(0)} = \begin{bmatrix} 0 & 0 \end{bmatrix} \cdot \begin{bmatrix} 1/2 \\ 1/2 \end{bmatrix} - \begin{bmatrix} 0 \end{bmatrix} = \begin{bmatrix} 0 \end{bmatrix}$$

$$y_0 = \text{sigmoid}(v_0) = \frac{1}{1+e^{-v_0}} = \frac{1}{2} \quad y_0 = \begin{bmatrix} 1/2 \end{bmatrix}$$

$$EA^0 = y_0 - y_{d0} = \begin{bmatrix} 1/2 \end{bmatrix} - \begin{bmatrix} 1 \end{bmatrix} = \boxed{-\frac{1}{2}}$$

$$EI^0 = EA^0 \cdot y_0 \cdot (1-y_0) = \begin{bmatrix} -1/2 \end{bmatrix} \cdot \begin{bmatrix} 1/2 \end{bmatrix} \cdot (1-\frac{1}{2}) = \boxed{-\frac{1}{8}}$$

$$EW^0 = EI^0 \cdot z_0^T = \begin{bmatrix} -1/8 \end{bmatrix} \cdot \begin{bmatrix} 1/2 & 1/2 \end{bmatrix} = \begin{bmatrix} -1/16 & -1/16 \end{bmatrix}$$

$$EA^h = (W^0)^T \cdot EI^0 = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \cdot \begin{bmatrix} -1/8 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$E\theta^h = -EI^h = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$EI^h = EA^h \cdot z_0 \cdot (1-z_0) = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \cdot \begin{bmatrix} 1/2 \\ 1/2 \end{bmatrix} \cdot \begin{bmatrix} 1/2 \\ 1/2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$E\theta^0 = -EI^0 = \begin{bmatrix} 1/8 \end{bmatrix}$$

$$EW^h = EI^h \cdot x^T = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \cdot \begin{bmatrix} 0 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$3) \quad f(x) = (x-2)^2 \quad df/dx = 2(x-2) = 2x - 4 \quad x_0 = 0$$

$d=0,2$

$$x_1 = x_0 - d \cdot \frac{df}{dx} \Big|_{x_0} = 0 - 0,2 \cdot (2 \cdot 0 - 4) = 0,8$$

$$x_2 = x_1 - d \cdot \frac{df}{dx} \Big|_{x_1} = 0,8 - 0,2 \cdot (2 \cdot 0,8 - 4) = 1,28$$

$$x_3 = x_2 - d \cdot \frac{df}{dx} \Big|_{x_2} = 1,28 - 0,2 \cdot (2 \cdot 1,28 - 4) = 1,568$$

$$x_4 = x_3 - d \cdot \frac{df}{dx} \Big|_{x_3} = 1,568 - 0,2 \cdot (2 \cdot 1,568 - 4) = 1,7408$$

$$x_5 = x_4 - d \cdot \frac{df}{dx} \Big|_{x_4} = 1,7408 - 0,2 \cdot (2 \cdot 1,7408 - 4) = 1,8445$$

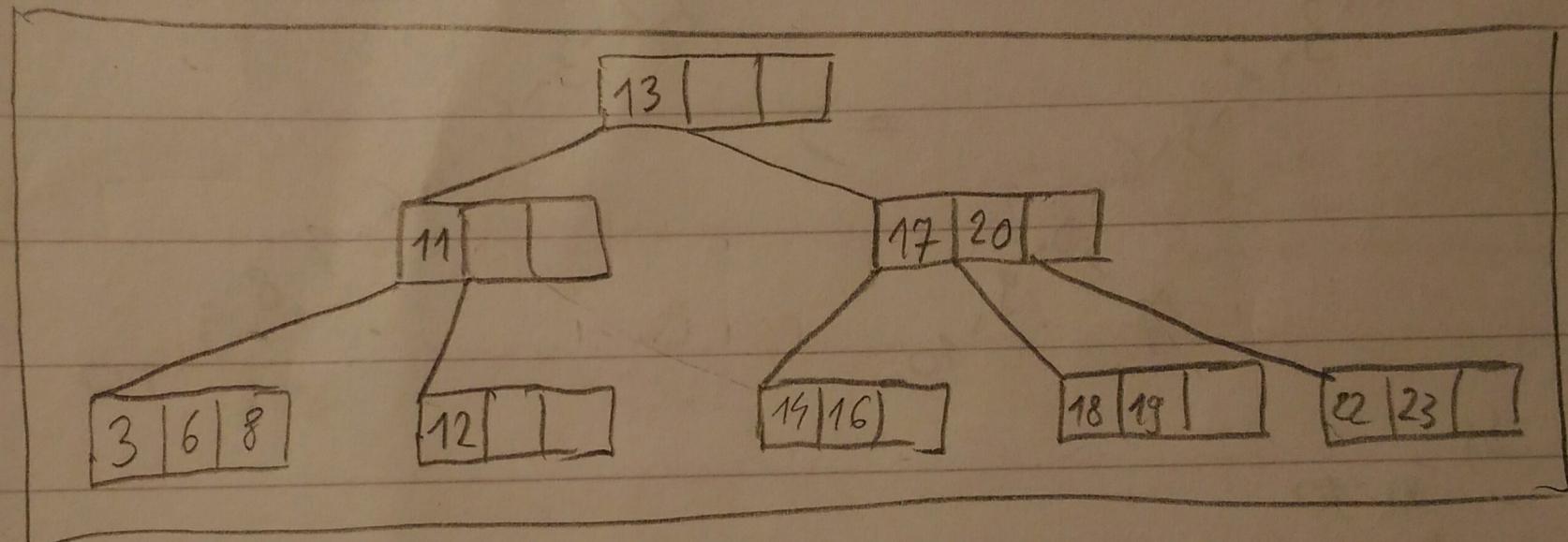
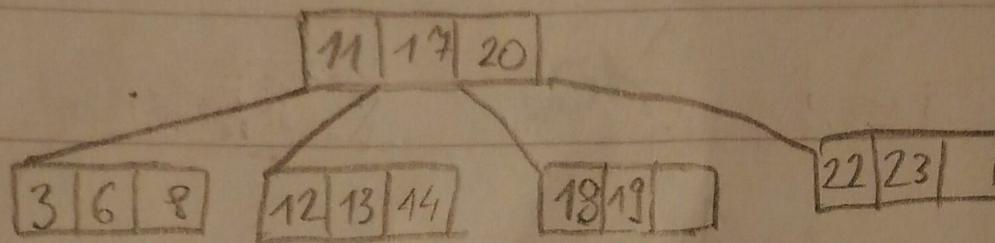
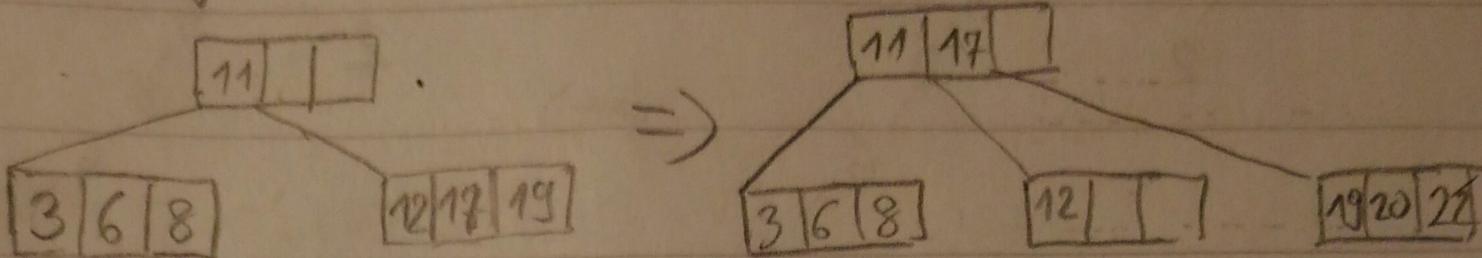
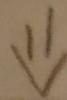
$$x_6 = x_5 - d \cdot \frac{df}{dx} \Big|_{x_5} = 1,8445 - 0,2 \cdot (2 \cdot 1,8445 - 4) = 1,9067$$

Na temelju rezultata prognozujemo da je

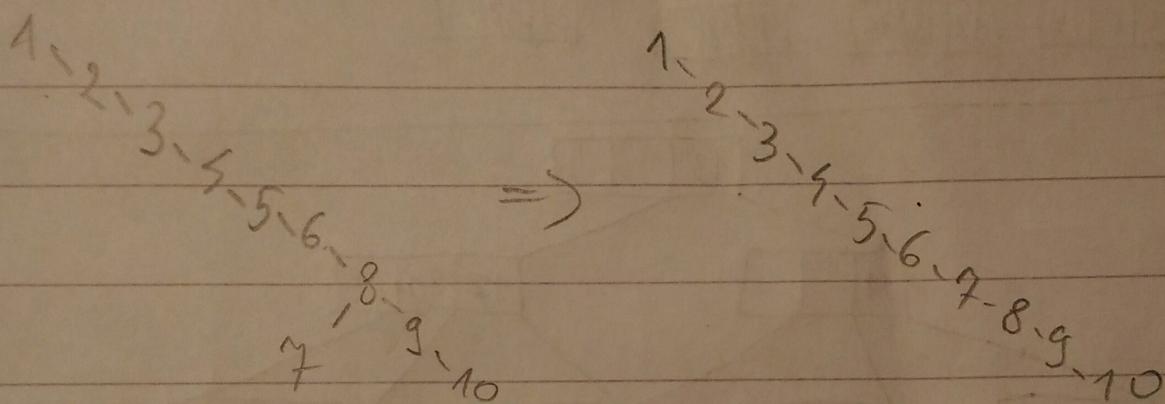
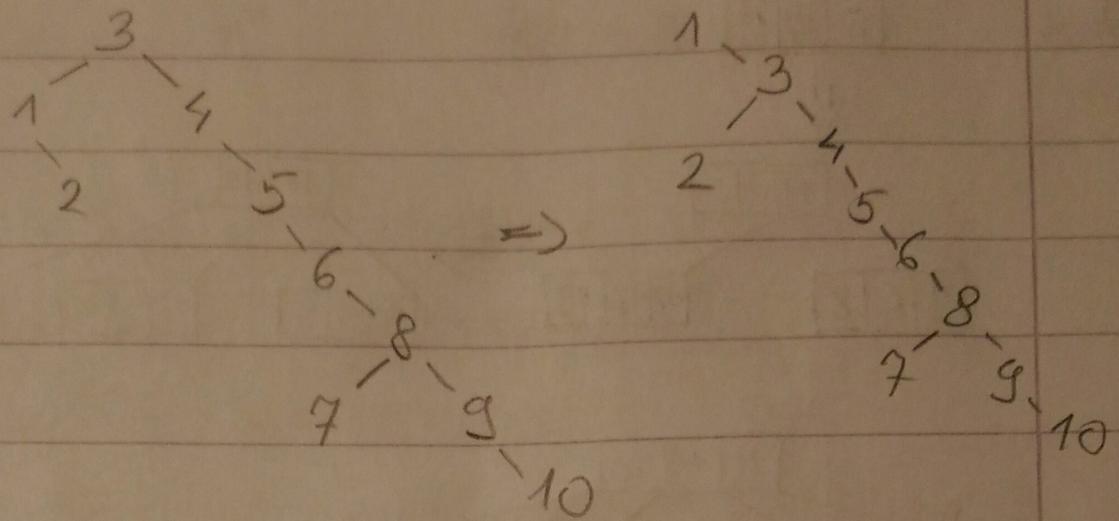
minimum za $x=2$.

2)

16	17	19
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1) a) stvaranje kvalitativice



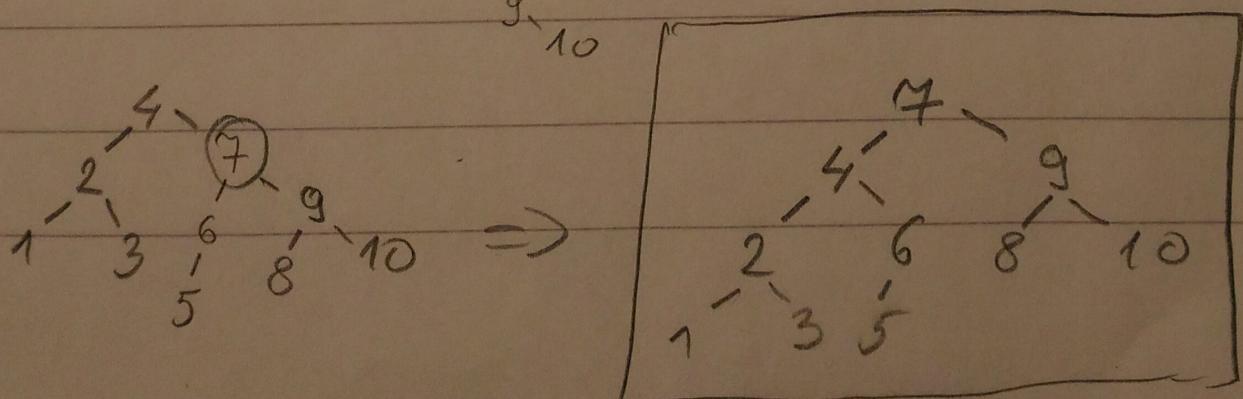
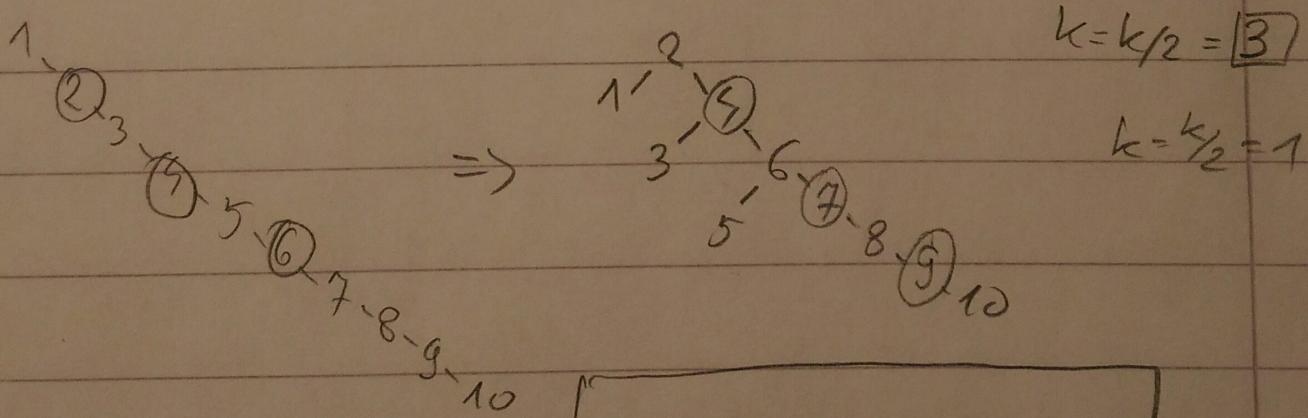
b)

$$n=10$$

$$h = \log_2(n-1) = \log_2(11) \approx 3$$

$$k = 2^h - 1 = 8 - 1 = 7$$

Prvo $n-k$ rotacija = 3



5)

	A	B	C	D	E	F	G	H
3	8	8	8	8	8	8	8	8
4	8	8	14	14	14	14	14	14
6	8	8	14	19	19	19	19	19
8	8	8	14	27	27	27	27	27
10	8	8	14	33	33	33	33	33
12	8	8	14	33	36	36	36	36
15	8	8	14	33	36	38	38	41
16	8	8	14	33	36	38	38	44
18	8	45	45	45	45	45	45	46
20	8	53	53	53	53	53	53	53

$$V_k(c) = \max\{V_{k-1}(c), V_{k-1}[c - \text{cost}(k)] + \text{value}\}$$

	value	cost
A	8	2
B	45	18
C	6	2
D	19	6
E	3	2
F	2	2
G	10	8
H	8	4

Treba uzeti prvo:

drugu stvar.

A : B