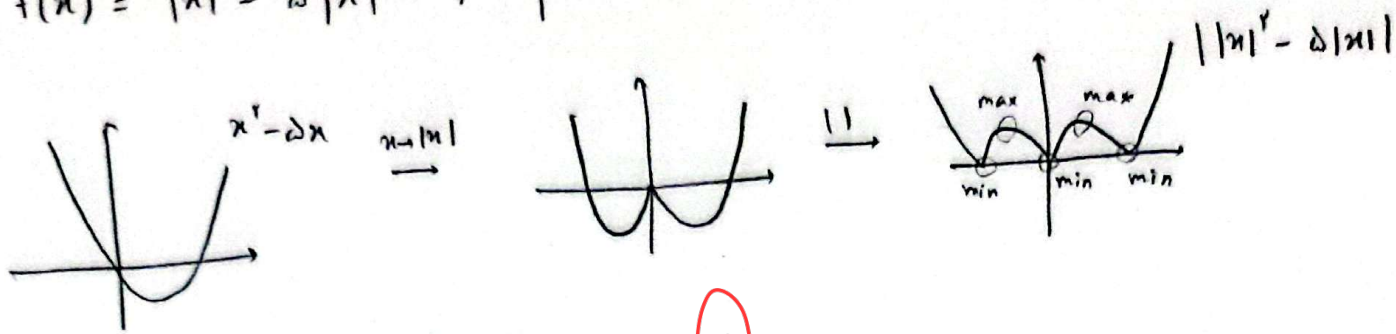


$$f(x) = |x|^r - \Delta|x|, \quad y = | |x|^r - \Delta|x| |$$

-6

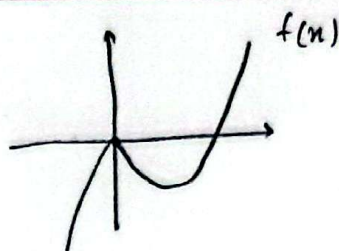


$$m = r, \quad n = r \rightarrow \frac{n}{m} = \frac{r}{r} = 1 \quad \checkmark$$

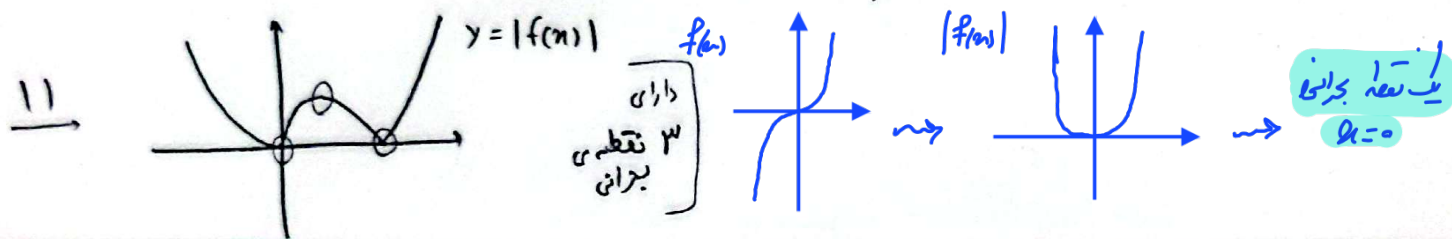
(2)

$$f'(x) = \begin{cases} rx + r & x > 0 \\ -rx + r & x < 0 \end{cases} \rightarrow f'(\cdot) = f'(\cdot) = r$$

$$f(x) = x|x| + rx = \begin{cases} x^2 + rx & ; x > 0 \\ -x^2 + rx & ; x < 0 \end{cases}$$



(4) 0.8



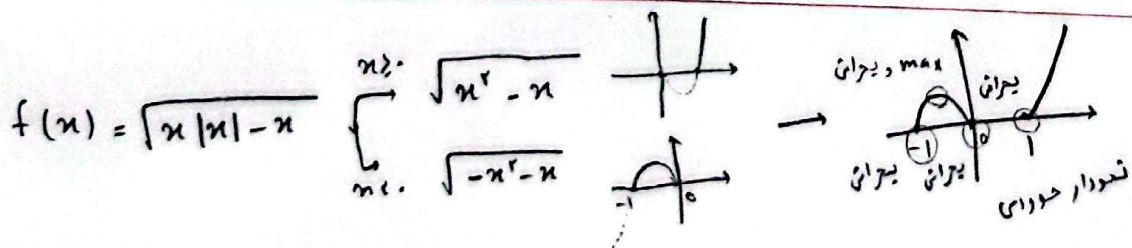
$$f(x) = \sqrt[r]{x^r} |x-a| \xrightarrow{[0, a]} f(x) = (a-x) \sqrt[r]{x^r} \xrightarrow{(\cdot)'} -x^{\frac{r}{r}} + \frac{r}{r} x^{\frac{r}{r}-1} (a-x)$$

-7

$$\rightarrow x^{-\frac{1}{r}} (-x + \frac{r}{r} (a-x)) = \frac{-\frac{\Delta}{r} x + \frac{r}{r} a}{r \sqrt[r]{x}} \rightarrow -\frac{\Delta}{r} x + \frac{r}{r} a = 0 \quad \text{ریشه همان max است}$$

$$-\frac{\Delta}{r} x = \frac{r}{r} a - x_0 = \frac{ra}{r}, \quad f(x_0) = 1/0 \rightarrow \sqrt[r]{\frac{ra^r}{r0}} \left(\frac{ra}{\Delta} \right) = \frac{r}{r} \rightarrow a = \frac{\Delta}{r} \quad \checkmark$$

(2)



-8

$$m = 1, \quad n = 0, \quad k = r \rightarrow \frac{km+h}{k-x} = 1 \quad \checkmark$$

(2)

$$f(x) = \frac{mx + r}{x - 1 + m} \xrightarrow{(1)'} f' = \frac{n(m-1) - r}{(x+m-1)^2} = \frac{m^2 - m - r}{(x+m-1)^2} \rightarrow m^2 - m - r \in \mathbb{R} \rightarrow \begin{matrix} (m-r) & (m+1) \\ \downarrow & \downarrow \\ r & -1 \end{matrix}$$

$$\begin{array}{c|c|c} -1 & \ominus & r \\ \hline + & - & + \end{array} \rightarrow -1 < m < r \rightarrow m = 0, 1$$

در مقدار \checkmark

$$f(x) = \frac{x}{1-x|x|} \Rightarrow f(x) = \begin{cases} \frac{x}{1-x^2} & x > 0 \\ \frac{x}{1+x^2} & x < 0 \end{cases} \xrightarrow{(1)'} f'(x) = \begin{cases} \frac{x^2+1}{1-x^2} & x > 0 \\ \frac{1-x^2}{1+x^2} & x < 0 \end{cases}$$

نقاط
 $\Rightarrow x = \{1, -1\}$
 بران
 مشتق = 0 یا
 مشتق ندارد

$$|x| = 1 \rightarrow \begin{cases} x > 0 & x^2 = 1 \rightarrow x = 1 \checkmark \\ x < 0 & -x^2 = 1 \rightarrow x^2 = -1 \times \end{cases} \rightarrow D_f = \mathbb{R} - \{i\}$$

یک نقطه میانی