

$$f(x) = 1 - \frac{a}{x^p} \text{ و } f(1) = 1 - \frac{a}{1} = 1 - a$$

$$\text{تغییر متوسط} = \frac{(1 - \frac{a}{x^p}) - (1 - a)}{x - 1} = \frac{-\frac{a}{x^p} + a}{x - 1} = \frac{\frac{pa}{x^{p+1}}}{x - 1} = \frac{pa}{x^{p+1}}$$

$$f(x) = 1 - ax^{-1} \Rightarrow f'(x) = a(-1)x^{-2} = \frac{a}{x^2}$$

$$\frac{a}{x^2} = \frac{a}{x^p} \xrightarrow{a \neq 0} \frac{1}{x^2} = \frac{1}{x^p} \Rightarrow \boxed{p = 2}$$

$$paax^p - ax + 11a = x \quad / \quad y' = (x)' \Rightarrow faa - a = 1$$

$$faax = 1 \Rightarrow x = \frac{1}{fa} = \frac{p}{pa} \longrightarrow pa(\frac{p}{pa})^p - a(\frac{p}{pa}) + 11a = \frac{p}{pa}$$

$$\Rightarrow pa(\frac{1}{a^p}) - \frac{1a}{pa} + 11a = \frac{p}{pa} \rightarrow \frac{1}{a^p} - \frac{1}{pa} + 11a = \frac{p}{pa} \rightarrow 11a^p = p$$

$$\rightarrow a^p = \frac{p}{11} = \frac{1}{11} \rightarrow a = \pm \frac{1}{\sqrt[11]{11}} \rightarrow a = \pm \frac{\sqrt[11]{11}}{11}$$

$$y' = px^p - 1 = 0 \rightarrow x = \pm \sqrt[p]{1/p}$$

x	-1	1
y'	+	-
y	↗	↘
	11	-11

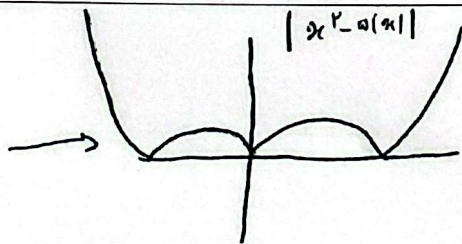
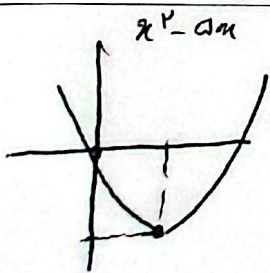
$$\rightarrow y_{\min} = -11$$

$$y' = px^p + paax - pb = 0 \rightarrow x=0 \rightarrow p(0)^p + pa(0) - pb = 0 \rightarrow \boxed{b=0}$$

$$x = -1 \rightarrow p(-1)^p + pa(-1) - p(0) = 0 \rightarrow 1 - pa = 0 \rightarrow \boxed{a = 1/p}$$

$$y(0) = -1 \rightarrow (0, -1) \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{1 + 1} = \sqrt{2} = \boxed{\sqrt{2}}$$

$$y(-1) = 0 \rightarrow (-1, 0)$$



$$m = 2$$

$$n = 2$$

$$\boxed{\frac{n}{m} = \frac{2}{2}}$$

