

by di

$$f(x) = 1 - \frac{a}{x}$$

$$\frac{1 - \frac{a}{r} - 1 + a}{r} = \frac{\frac{ra}{r} - a}{r} = \frac{a}{r}$$

(1)

$$f'(x) = +a x^{-2} = \frac{a}{x^2} \rightarrow x = \sqrt{\frac{a}{r}}$$

$$y = \frac{1}{2}ax^2 - ax + 11a \rightarrow f'(x) = \frac{1}{2}ax - a = 1 \rightarrow \frac{1}{2}ax = 2$$

(2)

$$\frac{1}{2}ax^2 - ax + 11a = x$$

$$\frac{1}{2}ax^2 - 4x + 11a = 0 \Rightarrow \frac{1}{2}a - 1 \pm \frac{1}{2}a = 0 \Rightarrow \frac{1}{2}a = 1 \pm \frac{1}{2}a \Rightarrow$$

$$1 = \frac{1}{2}a \rightarrow a = \frac{2}{r}$$

$$y = x^2 - 12x + 2 \rightarrow f'(x) = 2x - 12 = 0 \rightarrow x = 6$$

(3)

$$12 - 2 \times 6 + 2$$

$$\frac{-r}{+1} = \frac{+r}{-1+}$$

$$(6, -12)$$

$$y = x^2 + ax^2 - 2bx - \varepsilon \rightarrow f'(x) = 2x^2 + 2ax - 2b$$

(4)

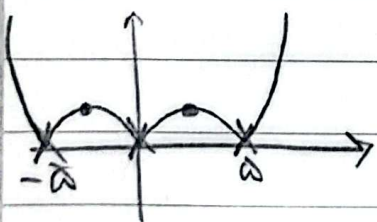
$$2x(x+r) = 2x^2 + 4x = 2x^2 + 2ax - 2b \Rightarrow b = 0, a = 2$$

$$y = x^2 + 2x^2 - \varepsilon \quad (0, -\varepsilon) \quad (-2, 0) \Rightarrow \sqrt{4+14} = 2\sqrt{2}$$

$$-1 + 12 - \varepsilon$$

$$f(x) = x^2 - a|x|$$

(5)



$$|x^2 - a|x||$$

$$\frac{r}{2}$$

$$\rightarrow \text{max} = 0 \rightarrow r$$

$$\rightarrow \text{min} = x \rightarrow r$$

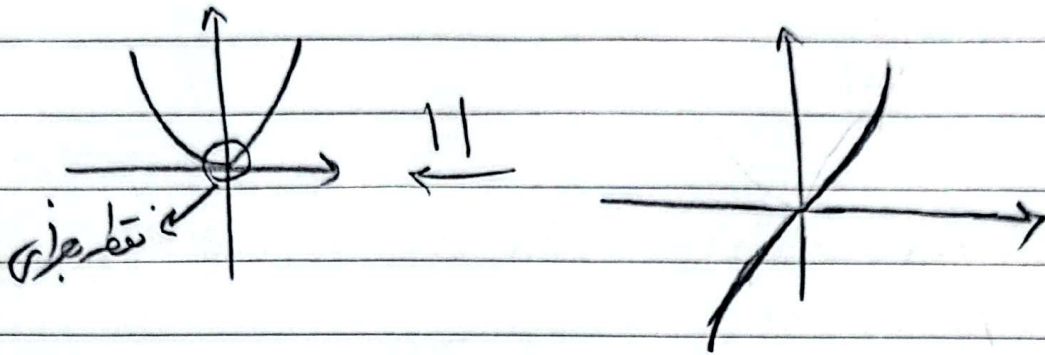
$$y = |f(x)|$$

$$x(|x| + k)$$

$$x \geq 0 \quad x^2 + kx$$

$$x < 0 \quad -x^2 + kx$$

(4)



$$f(x) = \sqrt[3]{2x^2} |x-a| \rightarrow x^{\frac{1}{3}} (-x+a) \rightarrow$$

$$\left(\frac{1}{3}\right) \frac{1}{3} \left(-\frac{1}{3} + a\right) = 0 \Rightarrow a = \frac{1}{3}$$

(5)

$$f(x) = \sqrt{|x||x|-x} \rightarrow x(1-|x|) \geq 0 \quad \begin{matrix} - & 0 & + \\ + & - & + \end{matrix}$$

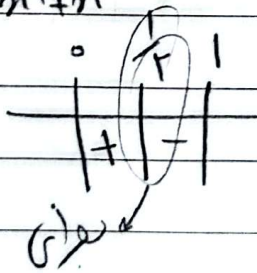
(6)

$$f(x) \begin{cases} \sqrt{-x^2+x} & 0 \leq x \leq 1 \\ \sqrt{x^2+x} & x < -1 \end{cases}$$

$$f'(x) \begin{cases} \frac{-2x+1}{\sqrt{-x^2+x}} & 0 < x < 1 \\ \frac{2x+1}{\sqrt{x^2+x}} & x < -1 \end{cases}$$

$$\frac{-2x+1}{\sqrt{-x^2+x}} = 0 \rightarrow x = \frac{1}{2}$$

نقطة حرجية  $x = 0, -1$



$l = m$

$\cdot = n$

$k = k$

$$\frac{f}{f} = 1$$

$$y = \frac{mx + y}{x - 1 + m} \rightarrow \frac{m(x - 1 + m) - (mx + y)}{x - 1 + m} = \frac{-y}{x - 1 + m}$$

$$-m + 1 = 1 \Rightarrow m = 0$$

$$f(x) = \frac{x}{1 - x|a|}$$