

$$\frac{1 - \frac{a}{3} - 1 + a}{2} = \frac{2a}{6} = \frac{a}{3}$$

$$f'(x) = \frac{a}{x^2} = \frac{a}{3} \rightarrow x^2 = 3 \rightarrow x = \pm\sqrt{3}$$

1

$$y' = 4ax - 5 = 1 \rightarrow 4ax = 6 \rightarrow ax = \frac{3}{2}$$

$$A | x_1, x_2, x_1 < 0$$

$$2ax^2 - 5x + 18a = x \rightarrow 2ax^2 - 6x + 18a = 0$$

$$ax^2 - 6x + 18a = 0$$

$$\frac{3}{2}x - 6x + 18a = 0$$

$$18a = \frac{9}{2}x$$

$$x = 4a$$

$$\rightarrow 4a \times a = \frac{3}{2} \rightarrow 4a^2 = \frac{3}{2}$$

$$a^2 = \frac{3}{8} \rightarrow a = \sqrt{\frac{3}{8}} = \frac{\sqrt{6}}{4}$$

2

$$y' = 3x^2 - 12 = 0 \rightarrow x = \pm 2$$

	-2	+	2
y'	+	-	+
y	↗	↘	↗

$$x = +2 \rightarrow y = 8 - 24 + 2 = -14 \text{ min}$$

3

$$y' = 3x^2 + 2ax - 2b = 0 \rightarrow x=0 \rightarrow y'=0 \rightarrow b=0$$

$$y = x^3 + 3x^2 - 4$$

$$\rightarrow x = -2, y' = 0 \rightarrow 12 - 4a = 0 \rightarrow a = 3$$

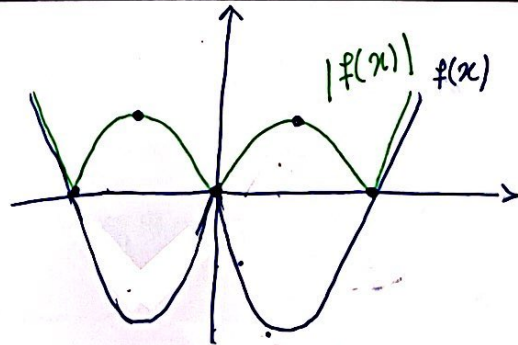
$$\left. \begin{array}{l} x=0 \quad y=-4 \\ x=-2 \quad y=0 \end{array} \right\} d = \sqrt{(2)^2 + (4)^2} = \sqrt{20} = 2\sqrt{5}$$

4

$$x \geq 0 \rightarrow f(x) = x^2 - 5x$$

$$\rightarrow x < 0 \rightarrow f(x) = x^2 + 5x$$

$$\left. \begin{array}{l} n=3 \\ m=2 \end{array} \right\} \frac{n}{m} = \frac{3}{2}$$



5

$$f(x) \rightarrow x > 0 \rightarrow x^2 + 3x \rightarrow |f(x)| = 2x + 3 = 0 \rightarrow x = -\frac{3}{2} \text{ غ.ن.}$$

$$f(x) \rightarrow x < 0 \rightarrow -x^2 + 3x \rightarrow |f(x)| = x^2 - 3x \rightarrow |f(x)'| = 2x - 3 \rightarrow x = \frac{3}{2} \text{ غ.ن.}$$

تابع در  $\mathbb{R}$  پیوسته است. امار  $x=0$  مشتق ناپیدا است  
 یک نقطه بحرانی است

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$$f(x) = x^{\frac{2}{3}}(a-x) = ax^{\frac{2}{3}} - x^{\frac{5}{3}}$$

$$f'(x) = \frac{2}{3}ax^{-\frac{1}{3}} - \frac{5}{3}x^{\frac{2}{3}} \rightarrow x^{-\frac{1}{3}}\left(\frac{2}{3}a - \frac{5}{3}x^{\frac{2}{3}}\right) = 0$$

$$\rightarrow \frac{2}{3}a - \frac{5}{3}\sqrt[3]{\frac{9}{4}} = 0 \rightarrow \frac{2}{3}a = \frac{5}{3}\sqrt[3]{\frac{9}{4}} \rightarrow a = \frac{5}{2}\sqrt[3]{\frac{9}{4}}$$

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$$f(x) \rightarrow x > 0 \rightarrow \sqrt{x^2-x} \rightarrow f(x) = \frac{2x-1}{2\sqrt{x^2-x}} = 0 \rightarrow x = \frac{1}{2}$$

$$f(x) \rightarrow x < 0 \rightarrow \sqrt{-x^2-x} \rightarrow f(x) = \frac{-2x-1}{2\sqrt{-x^2-x}} = 0 \rightarrow x = -\frac{1}{2}$$

$$D_f = (-\infty, -1] \cup [1, +\infty) \cup \{0\}$$

همگی اعضاء  
 لست  
 $m=n=0$

$$\frac{km+n}{k-n} = 0$$

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$$f(x) = \frac{m^2 - m - 2}{(x+m-1)^2} \leq 0$$

همواره نامنفی است

$$m^2 - m - 2 \leq 0 \rightarrow m = -1$$

$$\downarrow m = 2$$

$$f(x) = \frac{-1}{+ \phi - \phi + 2}$$

$$m \in \{-1, 0, 1, 2\} \rightarrow \text{مقدار 4}$$

۹

$$f(x) \rightarrow x > 0 \rightarrow \frac{x}{1-x^2} \rightarrow f'(x) = \frac{+2x^2+1}{(1-x^2)^2} = 0 \times$$

$$f(x) \rightarrow x < 0 \rightarrow \frac{x}{1+x^2} \rightarrow f'(x) = \frac{-2x^2+1}{(1+x^2)^2} = 0 \rightarrow x^2 = \frac{1}{2} \rightarrow x = -\sqrt{\frac{1}{2}}$$

تابع نقطه ناپیوستگی ندارد  
 لست در مطلق است

۲ نقطه بحرانی دارد

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