

عملی مادی باز (مدرسه) (c)

$$f(x) = \left(\frac{1}{x}\right)^{x-1} - 1$$

← سوال

$$y = \sqrt{x^2(f(x+1))} \rightarrow x^2(f(x+1)) \geq 0$$

$$\rightarrow x^2 \left(\left(\frac{1}{x+1}\right)^{x+1} - 1 \right)$$

$$\left(\frac{1}{x+1}\right)^{x+1} - 1 \rightarrow x-1 \rightarrow x=1 \rightarrow \frac{0}{+|-|+} \rightarrow Pf \in [0, +1]$$

$$f(x) \leq \sqrt{x+|x+2|} \rightarrow x+|x+2| \geq 0 \rightarrow \begin{cases} x+x+2 \geq 0 \rightarrow 2x+2 \geq 0 \rightarrow x \geq -1 \\ x-x-2 \geq 0 \Rightarrow -2 \leq 0 \end{cases}$$

$$\rightarrow Pf = [-1, +\infty) \rightarrow f(0)$$

$$\rightarrow f(-x) \in (-\infty, 1]$$

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

← سوال

$$f(x) \leq 0 \rightarrow x = 1, 3, -1$$

$$x-1 \leq 0 \rightarrow x \leq 1$$

$$\begin{array}{c} -1 & 1 & 3 \\ - & + & - & + \\ \hline \end{array}$$

$$\rightarrow Pf = (-1, 1] \cup (3, +\infty)$$

$$\begin{aligned} & \frac{ax^2 - vx^2 - (x-1)}{ax^2 - vx^2 - vx^2} \cdot \frac{rx^2 + ax + b}{rx^2 - vx^2 + 1} \\ & \frac{ax^2 - vx^2 - vx^2}{ax^2 - vx^2 - vx^2} \cdot \frac{rx^2 + ax + b}{rx^2 - vx^2 + 1} \end{aligned}$$

$$a = -1 \leftarrow \text{سوال}$$

$$\begin{aligned} & -vx^2 - (v+rb)x^2 - (x-1) \\ & + vx^2 + vx^2 + vx^2 \end{aligned}$$

$$\begin{aligned} b &= -1, a^2 - vb - vx^2 \\ &\rightarrow a^2 + a - v - vx^2 = 0 \rightarrow a^2 + a - vx^2 = 0 \\ &\rightarrow a = \frac{-1 \pm \sqrt{1 + 4vx^2}}{2} \end{aligned}$$

$$(-v - vb + va^2)x^2 + (-1 + vb) - vx^2 = 0$$

$$\sqrt{-(a+b)} = \sqrt{-(-1-3)} = \sqrt{4} = 2$$

$$f(x) = x^3 + x \quad f\left(\frac{x}{x}\right) = \frac{4x}{x^3} + \frac{x}{x} \quad \leftarrow \text{سوال}$$

$$y = \sqrt{f(x)f\left(\frac{x}{x}\right)} \geq 0 \rightarrow x^3 + x \geq \frac{4x}{x^3} + \frac{x}{x} \geq 0$$

$$\frac{x^4 + x^4 - 4x - x^4}{x^3} \geq 0 \rightarrow x^4 = x \rightarrow x^3 + x^2 - 4x - 1 \geq 0$$

$$(x^2 - 1)(x^2 + x + 4) \geq 0 \rightarrow x^2 - 1 \geq 0$$

صواب
بشر

$$x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1 \text{ or } x \leq -1$$

$$\frac{(x^2 - 1)(x^2 + x + 4)}{x^3} \geq 0 \rightarrow \frac{x^2 - 1}{x^3} \geq 0 \rightarrow \frac{x^2 - 1}{x^3} \geq 0$$

$$\rightarrow [-1, 0) \cup [1, +\infty)$$

$$f(x^3 + x) = 2x^2 - 1 \quad \begin{cases} x^3 + x = 2 \rightarrow x = 1 \\ x^3 + x = 1 \rightarrow x = 0 \end{cases}$$

سوال

$$f(1) + f(0) = f(1) = 2(1)^2 - 1 = 1 \rightarrow 1 + 1 = 2$$

$$f(x) = x^3 - 4x^2 + 12x - 11 \rightarrow (x-1)^3 + 1 \quad \leftarrow \text{سوال}$$

$$g(x) = x^3 + 9x^2 + 12x + 2 \rightarrow (x+3)^3 - 2$$

$$\rightarrow g(\sqrt[3]{2} - 3) = (\sqrt[3]{2} - 3 + 3)^3 - 2 = 2 - 2 = 0$$

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

$$\rightarrow \frac{-2}{10} = -\frac{1}{5}$$

$$f(x) + g(x) = a + b\sqrt{x+c}$$

سوال ←

$$\rightarrow t = \sqrt{x-5} \rightarrow t^2 = x-5$$

$$f(x) = \sqrt{t^2 + t + 4 + 5 + 9} = \sqrt{(t+2)^2} = t+2$$

$$g(x) = \sqrt{t^2 - 5 + t + 5} = \sqrt{(t-2)^2} = t-2$$

$$\rightarrow \textcircled{1} g(x) + f(x) = t+2 + t-2 = 2t$$

$$\rightarrow \textcircled{2} g(x) + f(x) = t+2 + t-2 = 2t$$

$$\rightarrow 2t = 2\sqrt{x-5} \rightarrow a + b\sqrt{x+c} \rightarrow a=0, b=2, c=-5$$

$$\Rightarrow \frac{a+b}{c} = \frac{0+2}{-5} = \left(-\frac{2}{5}\right)$$

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

$$\rightarrow \frac{-2}{-1} + \frac{1}{-1} + \frac{3}{-1} +$$

سوال ←

$$\rightarrow R = \{1, 3\}$$

$$g(x) = \{(2, 1), (6, 0), (3, 2), (0, 4)\}$$

$$\rightarrow g(x) \cap f(x) = (2, 1, 0) \rightarrow \frac{g}{f} = \frac{1}{-1} = \textcircled{-1}$$

نقطه‌های مشترک در $f(x)$ و $g(x)$

$$\rightarrow \frac{3}{3}$$

$$\rightarrow (2, -1), (0, \frac{4}{3})$$

$$f(2x) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2, 2), \left(-\frac{1}{2}, 4\right) \right\}$$

سوال ←

$$f(x^2) = (1, 2), (-1, 2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2, 2), (-2, 2)$$

$$2g(x) + 1 = \{(-2, 1), (1, 3), (3, 9), (-1, 1)\}$$

$$\frac{2f}{g} \Rightarrow 2f = \{(1, 4), (3, -2), (4, 4), (-1, 4)\}$$

$$g = \{(-2, 3), (1, -1), (3, 2), (-1, 0)\}$$

$$\frac{2f}{g} = \frac{(1, -4)(3, -1)}{(-1, 3)}$$