

نام و نام خانوادگی: (پیشوند) (شماره) کلاس: (پیشوند)
 جمع ۱، ۵

$$y = \sqrt{x + f(x)} \rightarrow x f(x) \geq 0 \begin{cases} \rightarrow x \leq 0, f(x) \leq 0 \quad (1) \\ \rightarrow x \geq 0, f(x) \geq 0 \quad (2) \end{cases}$$

$$\rightarrow (1) \cup (2) \rightarrow Df = [-5, 0] \cup [2, 5]$$

$$y = \sqrt{\frac{-x}{f(x)}} \begin{cases} \rightarrow x \leq 0, f(x) > 0 \rightarrow [-3, 0] \quad (1) \\ \rightarrow x > 0, f(x) < 0 \rightarrow [0, 2] \quad (2) \end{cases}$$

$$-3, -2, -1, 0, 1, 2 \rightarrow \boxed{\text{عدد 5}}$$

$$f(x) - 2f(2) = x^2 - 3x + 4 \xrightarrow{x=2} f(2) - 2f(2) = 2^2 - 3 \times 2 + 4 \\ -f(2) = 2 \rightarrow f(2) = -2 \rightarrow -2f(2) = 4$$

$$f(x) - 4 = x^2 - 3x + 4 \xrightarrow{x=-2} f(-2) + 4 = (-2)^2 - 3 \times (-2) + 4 \\ f(-2) = 10 \checkmark$$

$$x - \sqrt{x+3} \rightarrow x > 3$$

$$2x+3 \rightarrow x \leq 3 \xrightarrow{x=1} 2 \times 1 + 3 = 5$$

$$\frac{f(5)}{f(5)} \rightarrow x - \sqrt{x+3} \rightarrow 5 - \sqrt{5+3} \rightarrow 5 - 3 = 2 \rightarrow f(f(1)) = 2$$

$$\frac{f(5)}{f(5)} \rightarrow x - \sqrt{x+3} \rightarrow 5 - \sqrt{5+3} = 2 \\ \frac{f(2)}{f(2)} \rightarrow 2x+3 \rightarrow 2 \times 2 + 3 \rightarrow 4+3=7 \rightarrow f(f(5)) = 7$$

$$f(x-1) - f(x) = 4x+2, f(x) = ax^2 - bx + 2 \rightarrow$$

$$\xrightarrow{x=1} f(0) - f(1) = 1 \quad (P)$$

$$2 - f(1) = 1$$

$$-f(1) = -1$$

$$f(1) = 1$$

$$\xrightarrow{x=0} f(0) = 0+0+2 \rightarrow f(0) = 2 \checkmark \quad (1)$$

$$\xrightarrow{x=-1} f(-1) = a-b+2 \rightarrow a-b = -1 \checkmark \quad (3)$$

$$f(x) = \frac{x^2 + 4x + 5}{x^2 + 4x + 7} \xrightarrow{f(\sqrt{3}-1)} \frac{(3+4-4\sqrt{3}) + (4\sqrt{3}-1) + 5}{(3+4-4\sqrt{3}) + (4\sqrt{3}-1) + 7} = \frac{4}{6} = \frac{2}{3} \quad \checkmark$$

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$$f\left(x - \frac{1}{x}\right) = \frac{x^2 + 1}{x^2 + 1} \rightarrow x - \frac{1}{x} = -3 \rightarrow x^2 - 1 = -3x \rightarrow x^2 + 3x - 1 = 0$$

$$x^2 + 3x - 1 = 0 \quad -b \pm \sqrt{b^2 - 4ac} \rightarrow \frac{-3 \pm \sqrt{9 - 4 \times 1 \times (-1)}}{2 \times 1} = \frac{-3 \pm \sqrt{13}}{2}$$

توان ۱۴

$$\left(\frac{-3 \pm \sqrt{13}}{2}\right)^2 + 1 = \frac{121 + 33\sqrt{13}}{4} = \frac{2(121 + 33\sqrt{13})}{4} = \frac{11 + 3\sqrt{13}}{2} \rightarrow f(-3) = 11$$

در این سوال چون یکین زوج فرقی نمی کنند که منفی به توان ۲ یا ۴

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$$g(x) = \sqrt{9 - x^2} \rightarrow [-3, 3] \quad f(x) = \{(2, 0), (1, -4), (0, 2), (7, 1)\}$$

$$\text{الف) } \frac{f}{g} = \left\{ \left(0, \frac{2}{\sqrt{9}}\right), \left(1, \frac{-4}{\sqrt{2}}\right), \left(2, \frac{0}{\sqrt{5}}\right) \right\} = \left\{ \left(0, \frac{2}{3}\right), \left(1, -\sqrt{2}\right), \left(2, 0\right) \right\}$$

$$\text{ب) } \frac{g}{f} = \left\{ \left(0, \frac{3}{2}\right), \left(1, \frac{\sqrt{2}}{-4}\right), \left(2, \frac{\sqrt{5}}{0}\right) \right\} = \left\{ \left(0, \frac{3}{2}\right), \left(1, -\frac{\sqrt{2}}{4}\right) \right\}$$

تعریف نشده

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$$f(x) = \{(2, 1), (3, 4), (-5, 2), (1, -2)\}$$

$$\text{الف) } 2f(x) = \{(2, 2), (3, 8), (-5, 4), (1, -4)\}$$

$$\text{ب) } f(x) + 1 = \{(2, 2), (3, 5), (-5, 3), (1, -1)\}$$

$$\text{ج) } 3f^2(x) + 1 = \{(2, 4), (3, 49), (-5, 13), (1, 13)\}$$

$$\text{د) } f(2x) = \{(1, 1), \left(\frac{3}{2}, 4\right), \left(-\frac{5}{2}, 2\right), \left(\frac{1}{2}, -2\right)\}$$

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$$f(x) = \{(2, 3), (7, 2), (1, 4), (3, 1), (5, 2)\} \quad g(x) = \{(1, 0), (2, 1), (-1, 4), (-2, -3), (3, -1)\}$$

$$\text{الف) } \left\{ \left(2, \frac{4}{2}\right), \left(1, \frac{4}{1}\right), \left(3, \frac{2}{1}\right) \right\}$$

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$$\text{ب) } \left\{ \left(-2, \frac{4}{1}\right), \left(1, \frac{4}{0}\right), \left(3, \frac{2}{-1}\right) \right\} = \{(2, 4), (3, -2)\}$$

تعریف نشده

$$\frac{2f}{g}$$