

۲. آفرین!

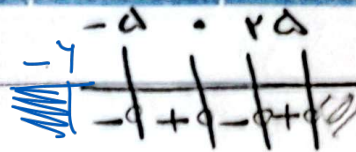
Date

Subject

$$x f(x) \geq 0$$

$$x = 0$$

$$f(x) = -5, 2, 5$$



سوال ۱

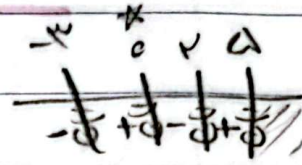
(۲)

$$D_f = [-5, -1] \cup [2, 5] \checkmark$$

$$\frac{x}{f(x)} \leq 0$$

$$x = 0$$

$$f(x) = 5, 2, -3$$



سوال ۲

(۲)

$$D_f = (-3, 2) - \{0\} \rightarrow 3 \text{ عدد صحیح دارد} \checkmark$$

$$f(2) - 2f(2) = 5 - 4 + 5 \rightarrow -f(2) = 2 \rightarrow f(2) = -2 \quad \text{سوال ۳}$$

$$f(-2) - \frac{f(-2)}{2} = 5 + 4 + 5 \rightarrow f(-2) = 1. \checkmark$$

(۲)

$$f(1) \quad 2 \times 1 + 3 = 5$$

$$f(5) = 5 - \sqrt{9} = 2$$

سوال ۴

$$f(2) = 2 \times 2 + 3 = 7$$

$$f(f(5)) + f(f(1)) = 9 \checkmark$$

(۲)

$$f(n-1) - f(n) = 4n + 2 \quad f(n) = an^2 - bn + 2$$

سوال ۵

$$a(n-1)^2 - b(n-1) + 2 - an^2 + bn - 2 = 4n + 2 = 0 \rightarrow$$

$$an^2 - 2an + a - b(n-1) + b - an^2 + bn - 4n - 2 = 0 \rightarrow$$

$$-2an + a + b - 4n - 2 = 0 \rightarrow n(-2a - 4) + a + b - 2 = 0 \rightarrow$$

$$(2a + 4)n = a + b - 2 \rightarrow n = \frac{a + b - 2}{2a + 4}$$

$$n=0 \rightarrow a + b = 2$$

$$n=1 \rightarrow a - b = -1$$

$$2a = -1$$

$$a = -\frac{1}{2}$$

$$b = \frac{5}{2}$$

$$a - b = -1 \checkmark$$

$$f(x) = \frac{(x+2)^2 + 1}{(x+2)^2 + 13} \quad f(\sqrt{3}-2) = \frac{(\sqrt{3}-2+2)^2}{(\sqrt{3}-2+2)^2} = \frac{1}{1} = 1$$

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

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

$$f(-3) = (-3)^2 + 2 = 11$$

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

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

$$f\left(\frac{g}{f}\right) = \left\{\left(2, 2\right), \left(3, 8\right), \left(-5, 4\right), \left(1, -4\right)\right\}$$

$$f\left(\frac{g}{f}\right) = \left\{\left(2, 2\right), \left(3, 8\right), \left(-5, 3\right), \left(1, -1\right)\right\}$$

$$f\left(\frac{g}{f}\right) = \left\{\left(2, 4\right), \left(3, 9\right), \left(-5, 13\right), \left(1, 13\right)\right\}$$

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

سوال ۷
 الف $f - g = \{ (1, 4), (2, 2), (3, 2) \}$

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

$\{ (2, 4), (3, -3) \}$