

تکلیف نهاده

مجموعه جوابها $1, \omega$

۵

۱

$$y = \sqrt{x f(x)} \rightarrow x f(x) \geq 0 \xrightarrow{\text{در } x=0} x=0 \quad x=1 \quad x=\omega \quad x=-\omega$$

$$Df = [-\omega, 0] \cup [1, \omega]$$

$-\omega$	0	1	ω
$-$	$+$	$-$	$+$

$$y = \sqrt{\frac{-x}{f(x)}} \rightarrow \frac{-x}{f(x)} \geq 0 \xrightarrow{\text{در } x=0} x=0 \quad x=1 \quad x=-1 \quad x=0 \quad x=\omega$$

$$Df = [-1, 1]$$

$$-1, -1/2, 0, 1/2, 1$$

-1	0	1	ω
$-$	$+$	$-$	$+$

ω, ω

۵

۲

$$f(1) - 1f(1) = 1 - 1 + 1 \rightarrow -f(1) = 1 \rightarrow f(1) = -1$$

$$f(-1) - (-1) = 1 + 1 + 1 \rightarrow f(-1) = -1 + 1 + 1 + 1 \rightarrow f(-1) = 1$$

۵

۳

$$\left. \begin{aligned} f(\omega) &= \omega - \sqrt{1} = \omega - 1 = 1 \rightarrow f(f(\omega)) = f(1) = 1 + 1 = 2 \\ f(1) &= 1 + 1 = 2 \rightarrow f(f(1)) = f(2) = 1 \end{aligned} \right\} 1 + 2 = 3$$

$$f(1) = 1 + 1 = 2 \rightarrow f(f(1)) = f(2) = 1$$

۵

۴

$$x=1 \rightarrow f(0) - f(1) = 1 + 1 = 2 \quad f(0) = 1 \quad f(1) = a - b + 1$$

$$1 - (a - b + 1) = 2 \rightarrow 1 - a + b - 1 = 2 \rightarrow \underline{a - b = -2}$$

$$f(x) = \frac{(x+1)^2 + 1}{(x+1)^2 + 3}$$

$$f(\sqrt{3}-1) = \frac{(\sqrt{3}-1+1)^2 + 1}{(\sqrt{3}-1+1)^2 + 3} = \frac{2}{4} = \frac{1}{2}$$

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

$$f(-3) = (-3)^2 + 2 = 9 + 2 = 11$$

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

$$g(x) = \sqrt{9-x^2} \rightarrow 9-x^2 \geq 0 \rightarrow 9 \geq x^2 \rightarrow -3 < x < 3$$

$$Dg \cap Df \rightarrow 0, 1, 2$$

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

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

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

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

$$\text{ج) } f^2(x)+1 = \left\{ (2, 5), (3, 10), (-5, 17), (1, 17) \right\}$$

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

$$\text{الف) } f-g = \left\{ (1, 3), (2, 2), (3, 1) \right\}$$

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