

$$1. \quad xf(x) \geq 0 \rightarrow [-\omega, \omega] \text{ تہ } f(x) < 0$$

19, 18

$$2. \quad [1, \omega], [-\omega, -1] \text{ تہ } f(x) > 0$$

$$3. \Rightarrow Df \subset [-\omega, 0] \cup [1, \omega]$$

✓

$$7. \quad \frac{-x}{f(x)} \geq 0 \rightarrow \underbrace{(-1, 0)}_{-1, -1} \cup \underbrace{(0, 1)}_1$$

1, 18

$$9. \quad -1, -1, 1 \rightarrow \text{مستطیل}$$

حالت اول: $f(x) < 0$, $x > 0$

حالت دوم: $f(x) > 0$, $x < 0$

$$10. \quad \begin{array}{ccccccc} -4 & -3 & 0 & 1 & 2 & 3 & 4 \\ \hline \oplus & \oplus & - & - & \oplus & \oplus & \oplus \end{array}$$

$$12. \quad f(x) - 2f(y) = x^2 - y^2 + x + y, \quad f(-1) = ?$$

$$13. \quad x = 1 \rightarrow f(1) - 2f(1) = 1 \rightarrow -f(1) = 1 \rightarrow f(1) = -1$$

$$14. \quad x = -1 \rightarrow f(-1) - 2f(-1) = 1 \rightarrow -f(-1) = 1 \rightarrow f(-1) = -1$$

$$17. \quad f(\omega) = \omega - \sqrt{a} = 1 \quad f(f(\omega)) = f(1) = 1 \times 1 + 1 = 2$$

$$18. \quad f(1) = 2(1) + 1 = 3 \quad f(f(1)) = f(3) = 2$$

$$\Rightarrow 1 + 2 = 3$$

✓



$$f(n) = an^r - bn + r \rightarrow f(n-1) - f(n) = 4n + r$$

-d

$$a - b = ?$$

$$\xrightarrow{f(n) \geq n-1} f(n-1) = a(n-1)^r - b(n-1) + r = an^r + a - r - an - b + r$$

$$f(n-1) - f(n) = r - a + b$$

$$-r + a + b = 4n + r \rightarrow a = -r + 4n + r$$

$$a + b = r \rightarrow -r + b = r \rightarrow b = r + r \rightarrow b = 2r$$

$$a - b = -r - 2r = -3r$$

$$f(n) = n^r - 3n + 1$$

-4

$$\frac{r f(r) + f(-1)}{f'(r)} = \frac{r + 1}{1} = r + 1$$

$$f(r) = 1 - 3r + 1 \rightarrow f(r) = -2r$$

$$f(-1) = 1 + 3 + 1 \rightarrow f(-1) = 5$$

$$f(r) = -2r - 3r + 1 = f(r) = -5r + 1$$

$$f(r) = r^3 \times r + 1 = f(r) = r^4 + 1$$

-2

$$f(-r) = -r$$

$$f(r) = r^3 \times r + 1 = r^4 + 1$$

$$\frac{r^4 \times 1^3 - r^4 \times r}{1} = \frac{r^4 - r^5}{1} = r^4(1 - r)$$



SUBJECT

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$$f_2[(x, y), (x, y), (x, y), (x, y)]$$

$$\frac{f(f(x)) - f(f(y))}{f(x) - y} = \frac{4-4}{4-x} = 0$$

✓

$$f(x) = \frac{x^2 + 6x + 9}{9x^2 + 6x + 1}$$

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

$$9x^2 + 6x + 1 = (\sqrt{x} - y)^2 + 6(\sqrt{x} - y) + 1 = x + 6 - 4\sqrt{x} + 6\sqrt{x} - 1 = 2 - 1$$

$$f(\sqrt{x} - y) = \frac{-1 + 9}{-1 + 1} = \frac{8}{0} = \infty$$

$$f(y) = \frac{8 + 1 + 9}{8 + 1 + 1} = \frac{18}{10} = \frac{9}{5}$$

✓

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

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

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

$$x^2 + \frac{1}{x^2} + 2 - x^2 - \frac{1}{x^2} = 2$$

✓



Senobar