نام و نام خانوادگی محمد پارسا آخوندی ...... پاسخنامه تشریحی تکلیف شماره ...8... کلاس ......

19

1

$$-x^2+4x-4 \geq 0 \longrightarrow \frac{-b\pm\sqrt{\Delta}}{2a} = \frac{-4\pm 0}{-2} = 2 \longrightarrow \begin{array}{c|c} & 2 \\ \hline & -\ 0\ - \end{array}$$

$$\sqrt{\log_2^{(x-1)}} = 2 \longrightarrow \log_2^{x-1} = 4 \longrightarrow 2^4 = x-1 \longrightarrow \boxed{x=17}$$

$$D_{gof} = \{17\}$$

2

2

$$\left.\begin{array}{l} fog = 2x^2-6x+11 \\ gof = 4x^2-26x+48 \end{array}\right\} \; 4x^2-26x+48 = 2x^2-6x+11 \to 2x^2-20x+37=0$$

$$\frac{-b\pm\sqrt{\Delta}}{2a} = \frac{20\pm\sqrt{104}}{4} = \frac{10\pm\sqrt{26}}{2} \xrightarrow{\text{توان } 2} \frac{100+26+20\sqrt{26}+100+26-20\sqrt{26}}{4}$$

$$\longrightarrow = \frac{252}{4} = \boxed{63}$$

2

3

$$\left.\begin{array}{l} gof = 5x^2+11 \\ f(x) = 2x \end{array}\right\} \; g(2x) = 5x^2+11 \xrightarrow{2x=t} \underbrace{g(t) = 5\left(\frac{t}{2}\right)^2+11}$$

$$R_{g_{min}} = 11$$

$$g(x) = \frac{5}{4}x^2+11$$

$$g(x-7) = \frac{5}{4}(x-7)^2+11 = \frac{5}{4}(x^2-14x+49)+11$$

$$\frac{5}{4}x^2 - \frac{70}{4}x + \frac{289}{4} \longrightarrow min = -\frac{b}{2a} = -\frac{-\frac{70}{4}}{\frac{5}{2}} = \frac{140}{20} = \boxed{7}$$

1.5

4

$$f(g(x)) = 3g(x)-4 \longrightarrow 3g(x)-4 = 3x^2-6x-1$$

$$3g(x) = 3x^2-6x+3 \longrightarrow g(x) = x^2-2x+1$$

$$g(f(x)) = (3x-4)^2 - 2(3x-4)+1 = 9x^2-30x+25 = (3x-5)^2$$

2

5

$$f(x)-g(x) = -x+5 \;/\; g(x) = 2x+4+x-5 = 3x-1 \quad (1)$$

$$fog(x) = mx+2 \longrightarrow ma+2=0 \longrightarrow a = -\frac{2}{m}$$

$$g(x) = \frac{3}{2}f(x)-7$$

$$f(x) - \frac{3}{2}f(x) = -x-2 \longrightarrow f(x) = 2x+4 \quad (2)$$

$$(1),(2) \to fog = 6x+2 \longrightarrow 6a+2=0 \to \boxed{a=-\frac{1}{3}}$$

2

CamScanner

$fog = 9^{\log_3 x} \to (3^2)^{\log_3 x} \to 3^{2\log_3 x} \to (3^{\log_3 x})^2 = x^2$

$gof = \log_3 9^x \to \log_3 (3^2)^x = 2x\log_3 3 \to 2x \times 1 = 2x$ ۱/۵ ۶

$x^2 \leq 2x \to x \leq 2 \to D_f = [-\infty, 2] \xrightarrow{\text{اعضای}} \boxed{1,2}$

$x^2 - 2x \leq 0 \to \begin{array}{c|c|c|c|c} & 0 & & 2 & \\ + & & - & & + \end{array} \to [0,2] \xrightarrow{\text{صحیح}}$

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

$x^2 + x - 4 - \frac{2}{x} + \frac{4}{x^2} = (x - \frac{2}{x})^2 + (x - \frac{2}{x})$ ۲ ۷

$f(\frac{x^2-2}{x}) = (x-\frac{2}{x})^2 + (x-\frac{2}{x}) \xrightarrow{x - \frac{2}{x} = t} f(t) = t^2 + t \to \boxed{f(x) = x^2 + x}$

$fog = \log_2^{8x - x^2} \to D_f = 8x - x^2 > 0 \to x(8-x) > 0$ ۲

$D_f = (0,8)$ $\quad A \cap B = (0,8) \cap (-\infty, 4] = (0,4] \to$ ~~عضو~~ $\quad \begin{array}{c|c|c|c|c} & 0 & & 8 & \\ - & & + & & - \end{array}$ ۸

$R_f = \begin{cases} max = 8x - x^2 \to x = 4 \to max\, R_f = 4 \\ min = fog(0) = -\infty \to min\, R_f = -\infty \end{cases} \Big\} R = (-\infty, 4]$

$\left.\begin{array}{l} f(x) = 1 - 3x^2 \\ g(x) = x - 1 \\ h(x) = x^3 + 2x + 1 \end{array}\right\}$ $hog(x) = f(x) \to (x-1)^3 + 2(x-1) + 1 = 1 - 3x^2$

$x^3 - 3x^2 + 5x - 2 = 1 - 3x^2 = x^3 + 5x - 3$ ۹

مشتق میگیریم $\to 3x^2 + 5 \to$ همیشه مثبته $\to$ شیبش مثبته $\to$ اکیداً صعودیه ۲

$\to$ ۱ ریشه دارد.

$g(f(x)) = ax^3 + 2x \xrightarrow{f(x) = t} g(t) = ax^3 + 2x$

$g(3) = 8 \to f(x) = 3 \to \frac{x^2 - 4}{x} = 3 = \underbrace{(x-4)(x+1) = 0}_{x = 4 \text{ یا } x = -1}$ ۲

$x = 4 \to g(3) = a(4^3) + 2(4) = 64a + 8 = 8 \to 64a = 0 \to a = 0$ ۱۰

$x = -1 \to g(3) = a(-1)^3 + 2(-1) = -a - 2 = 8 \to -a = 10 \to a = -10$