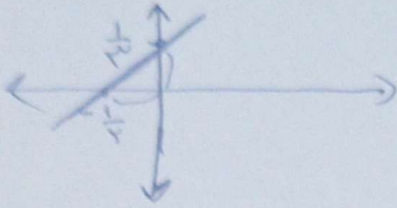


9,5

نام و نام خانوادگی فریدون خاوری پاسخنامه تشریحی تکلیف شماره کلاس

$$2y = 3x - 1 \Rightarrow 2y + 1 = 3x \Rightarrow \frac{2y+1}{3} = x \Rightarrow \frac{2}{3}x + \frac{1}{3} = y$$

$$\frac{2}{3}x + \frac{1}{3} = 0 \Rightarrow \frac{2}{3}x = -\frac{1}{3} \Rightarrow x = -\frac{1}{2}$$



$$\frac{\frac{1}{3} \times \frac{1}{2}}{2} = \left(\frac{\frac{1}{4}}{\frac{1}{2}} \right) = \boxed{\frac{1}{12}} \checkmark$$

2

$$y = x^2 - 2x + 3 \Rightarrow x^2 - 2x + 1 = y - 2 \Rightarrow (x-1)^2 + 2 = y$$

$$\frac{-b}{2a} = \frac{-(-2)}{2(1)} = \frac{2}{2} = 1$$

$$y = (x-1)^2 + 2 \Rightarrow y - 2 = (x-1)^2$$

$$\sqrt{y-2} = x-1 \Rightarrow \sqrt{y-2} + 1 = x \Rightarrow \sqrt{x-2} + 1 = y$$

$$[2, +\infty) \checkmark$$

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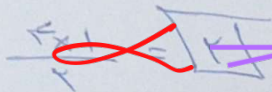
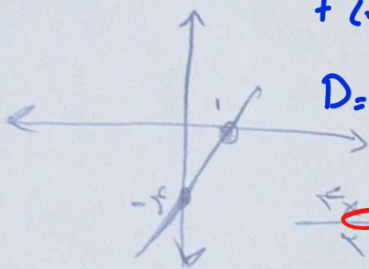
$$\sqrt{y-2} = x-1 \Rightarrow \sqrt{y-2} + 1 = x$$

$$\sqrt{x-2} + 1 \Rightarrow [2, +\infty) \checkmark$$

2

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

$$D = (-\infty, 2]$$



$$2x - \sqrt{14 - \varepsilon n(\varepsilon - x)} = 2x - \sqrt{14 - \varepsilon n + \varepsilon n x}$$

$$2x - \sqrt{\varepsilon x^2 - 14x + 14} = 2x - \sqrt{\varepsilon(x^2 - \frac{14}{\varepsilon}x + \frac{14}{\varepsilon})}$$

$$2x - 2|x - \frac{7}{\varepsilon}| = 2x - 2(x - \frac{7}{\varepsilon})$$

$$2x + 2x - \varepsilon x - \frac{14}{\varepsilon} = \varepsilon x - \frac{14}{\varepsilon}$$

$$(1 + 2)\frac{7}{\varepsilon} = 4$$

1

$$y = \frac{x}{\sqrt{x^2 - 5}} \Rightarrow y^2 = \frac{x^2}{x^2 - 5} \Rightarrow y^2 x^2 - 5y^2 = x^2 \Rightarrow y^2 x^2 - x^2 = 5y^2$$

1

بررسی یک به یک بودن؟ یک بند

$$x^2 = \frac{5y^2}{y^2 - 1} \Rightarrow x = \sqrt{\frac{5y^2}{y^2 - 1}} \Rightarrow y = \frac{\sqrt{5}x}{\sqrt{x^2 - 1}}$$

دقت!

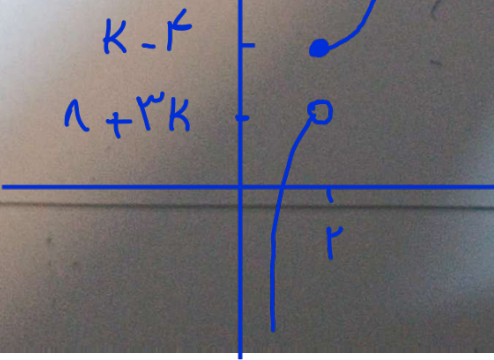
$$g(x) = \begin{cases} x^2 - \varepsilon x + k & x \geq 2 \\ -x^2 + 4x + 3k & x < 2 \end{cases}$$

$$(2)^2 - \varepsilon(2) + k = -4 + 8 + 3k$$

$$-4 + k \geq -4 + 8 + 3k \Rightarrow -2k = 12$$

$$k \leq -4$$

1,5

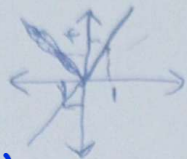


فرد خاکی

$$g(x) = ax + b|x|$$

$$f(x) = 3x + |x|$$

$$y = 3x + |x| \Rightarrow$$



$$f(x) = y \Rightarrow \frac{x}{y} = \frac{1}{4}$$

$$f(x) = y \Rightarrow \frac{x}{y} = \frac{1}{4}$$

$$g(x) = \begin{cases} (a+b)x & x \geq 0 \\ (a-b)x & x < 0 \end{cases}$$

$$\begin{aligned} a+b &= \frac{1}{4} \\ a-b &= \frac{1}{4} \end{aligned}$$

$$\begin{aligned} a &= \frac{1}{8} \\ b &= -\frac{1}{8} \end{aligned} \rightarrow ab = -\frac{1}{64}$$

$$\frac{3(r) + \epsilon}{r+m} = -10 \Rightarrow \frac{10}{r+m} = -10 \Rightarrow -10 - 10m = 10$$

$$f(x) = \frac{3x + \epsilon}{x+m}$$

$$y = \frac{3x + \epsilon}{x-3}$$

$$yx - 3y = 3x + \epsilon \Rightarrow yx - 3x = 3 + \epsilon \Rightarrow x(y-3) = 3 + \epsilon$$

$$\frac{y+\epsilon}{y-3} = x \Rightarrow \frac{y+\epsilon}{y-3} = y \quad f^{-1}(u) = \frac{3u+\epsilon}{u-3}$$

$$f \circ f^{-1}(u) = y \quad f \circ f^{-1}(u) = u \rightarrow x + \frac{3u+\epsilon}{u-3} = y \rightarrow u = \frac{3y+\epsilon}{y-3}$$

$$f(r-r_n) = t \xrightarrow{\text{از طرف } f^{-1}} r-r_n = f^{-1}(t) - n = \frac{3-f^{-1}(t)}{r}$$

$$g(\frac{r}{r}) = r-t \xrightarrow{\text{از طرف } g^{-1}} \frac{r}{r} = g^{-1}(r-t) - n = r g^{-1}(r-t)$$

$$\frac{3-f^{-1}(t)}{r} = r g^{-1}(r-t) \xrightarrow{t=r} 3-f^{-1}(r) = r g^{-1}(r) \xrightarrow{\text{جواب}} \boxed{3}$$

$$y = \frac{\omega x - 13}{1-x} \Rightarrow -\left(\frac{\omega(-x) - 13}{1-(-x)}\right) = -\left(\frac{-\omega x - 13}{1+x}\right) = \frac{\omega x + 13}{1+x} \Rightarrow \frac{\omega(x-1) + 13}{1+(x-1)}$$

$$\frac{\omega x - 10 + 13}{1+x-1} = \frac{\omega x + 3}{x-1} = f(x) \quad f^{-1}(x) = \frac{x+3}{x-\omega} = y$$

$$3 \xrightarrow{\text{واحد به مخرج}} \frac{3u+4}{u-1} = f^{-1}(u) = \frac{u+4}{u-2}$$

$$u^2 - 2u - 4 = 0 \rightarrow u = \boxed{3}$$

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

$$y = x + \frac{1}{x} \xrightarrow{\text{از طرف } f^{-1}} [y] = [x] + f[x] = \delta[x] - \frac{[x]}{\delta}$$

$$y = x + \frac{1}{x} \rightarrow x = y - \frac{1}{x} \xrightarrow{\text{طرفین ضرب}} y = x - \frac{1}{x}$$

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