

① $(m, r) = (c, r) \rightarrow m = c$
 الف $(c, n \in n) = (c, r) \rightarrow n^2 - n - r = 0$ $\begin{cases} n = -1 \times \\ n = r \checkmark \end{cases}$

17, 20
 شفا صرانی

② $(m, r) = (r, r) \rightarrow m = r$
 $(a, 1) = (-1, 1) \rightarrow a = -1$
 $(d, n) = (1, c) \rightarrow n = c$

1, 10

③ $DF \rightarrow cx - 1 \rightarrow RF = [r, +\infty)$, $DF = [r, +\infty)$
 $x \geq 1$
 $f(x) = x + 1 \rightarrow RF(1+a, +\infty) = (1+a, +\infty)$
 $x < 1$
 $x + a < 1 \rightarrow a < 1 - x \rightarrow a < 1$

1, 10

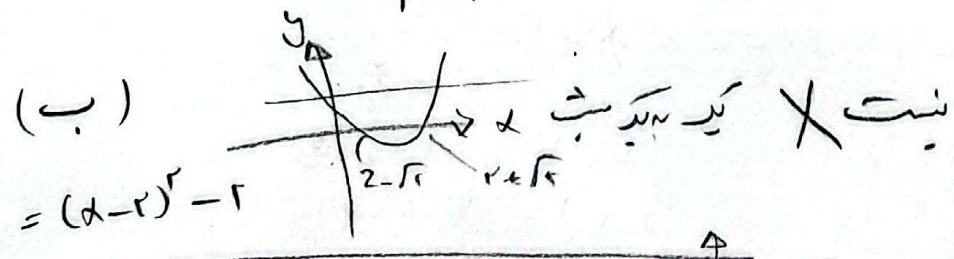
④ $f(x) = \begin{cases} cx - 1 & x \geq 1 \\ ax + a - 1 & x \leq 0 \end{cases} \rightarrow DF = [r, +\infty)$
 $DF = [a - 1, +\infty)$
 $a < 0$
 $DF = [-\infty, a - 1]$ ✓
 $a > 0$

2

① $a - 1 < r \rightarrow 0 < a < c$
 ② $a > 0$

⑤ $y = x^c + r$ الف $y = \sqrt{x - r}$

1, 0

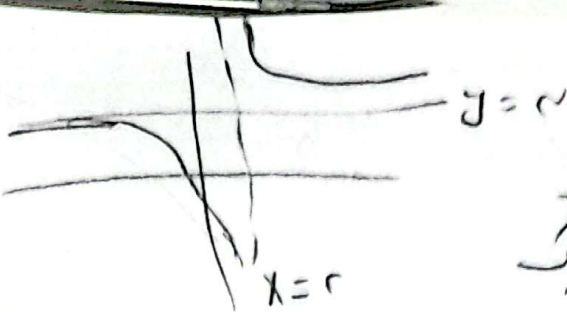


⑥ $y = \sqrt{x - c}$
 ⑦ $y = \frac{x + 1}{x + 2} = 2 \rightarrow x + 1 = 2(x + 2) \rightarrow x + 1 = 2x + 4 \rightarrow -x = 3 \rightarrow x = -3$

1, 0

⑤

$$y = \frac{cx+1}{x-r}$$

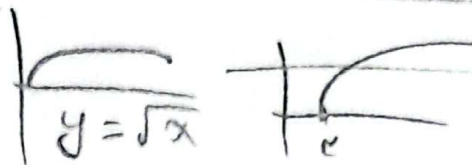


$$y' = \frac{2x+1}{2x-5}$$

یک سیمین
مدر را میب

⑥

$$y = \sqrt{x-c} \rightarrow$$

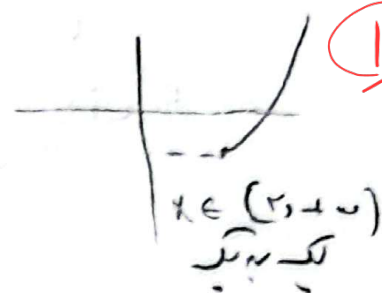
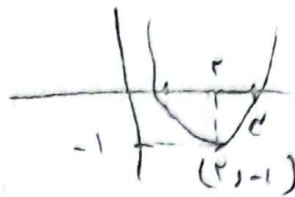


$$y = 2x^2 + 5$$

⑦

$$y = x^2 - 2x + c$$

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



⑧

$$y = x + \sqrt{x} \rightarrow (y-x) = \sqrt{x} \rightarrow (y-x)^2 = x$$

$$y^2 - 2xy + x^2 - x = 0 \rightarrow x^2 - (2y+1)x + y^2 = 0$$

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

$$x = \begin{cases} \frac{2y+1 + \sqrt{4y+1}}{2} \rightarrow \bar{f}^{-1}(x) = x + \frac{1}{2} + \sqrt{x+\frac{1}{2}} \\ \frac{2y+1 - \sqrt{4y+1}}{2} \rightarrow \bar{f}^{-1}(x) = x + \frac{1}{2} - \sqrt{x+\frac{1}{2}} \end{cases}$$

$$ax+b-\sqrt{x-c} = x + \frac{1}{2} - \sqrt{x+\frac{1}{2}}$$

$$\begin{aligned} a &= 1 \\ b &= \frac{1}{2} \\ c &= -\frac{1}{2} \end{aligned}$$

$$\begin{aligned} a+2b+2c &= 1 \\ 1+1-1 &= 1 \end{aligned}$$

$$a+2b+2c = 1$$

⑨

①

$$y = \frac{x}{\sqrt{x^2 - r}} \rightarrow \text{of } (-r, +r), \text{ Range } = (-\infty, 0] \cup (1, +\infty)$$

x	-	+	+
x-1	-	-	+
	+	-	+

$$y' = \frac{x'}{\sqrt{x^2 - r}} \rightarrow y \sqrt{x^2 - r} - y' = x' \rightarrow x' (y' - 1) = r y$$

$$x' = \frac{r y}{y' - 1} \rightarrow x = \pm \sqrt{\frac{r y}{y' - 1}}$$

1/NO

$$f^{-1}(x) = \pm \sqrt{\frac{r x}{x^2 - 1}}, \text{ of } f^{-1}(-\infty, 0] \cup (1, +\infty)$$

$$y = \frac{x_1}{\sqrt{x_1^2 - r}}$$

$$\rightarrow \frac{x_1}{\sqrt{x_1^2 - r}} = \frac{x_r}{\sqrt{x_r^2 - r}} \rightarrow \frac{x_1^2}{x_1^2 - r} = \frac{x_r^2}{x_r^2 - r} \rightarrow \frac{1}{x_1} = \frac{1}{x_r}$$

$$y = \frac{x_r}{\sqrt{x_r^2 - r}}$$

②

$$g(x) = \sqrt{x-1} \rightarrow y = \sqrt{x-1} \rightarrow \sqrt{x} = +1+y$$

$$x = (1+y)^2 \rightarrow g^{-1}(x) = (1+y)^2$$

$$-\frac{r}{8} = \sqrt{x-1} \rightarrow \frac{r}{8} = \sqrt{x} \Rightarrow \boxed{x = \frac{9}{r_0}}$$

$$\rightarrow g^{-1}\left(-\frac{r}{8}\right) = \frac{9}{r_0}$$

$$\frac{x}{1+|x|} = -\frac{r}{8} \rightarrow \text{if } x = -r - r|x|$$

$$x > 0 \rightarrow \sqrt{x} = -r \rightarrow x = -\frac{r}{8}$$

$$\boxed{x = -\frac{r}{8}}$$

$$f\left(-\frac{r}{8}\right) = -\frac{r}{8}$$

$$\boxed{f\left(-\frac{r}{8}\right) = -\frac{r}{8}}$$

$$g\left(\frac{9}{r_0}\right) = \frac{9}{r_0}$$

$$g(x)$$

$$g(x) = f\left(-\frac{r}{8}\right) + g^{-1}\left(-\frac{r}{8}\right) = -\frac{r}{8} + \frac{9}{r_0} = \frac{-r}{10}$$

$$\rightarrow \boxed{-\frac{r}{10}}$$

✓

1.

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

$$g(x) = x^2 + 1 + \sqrt{x^2 + 1} = 12 \rightarrow x = 2 \quad (2)$$

$$g(2) = 12 \rightarrow g^{-1}(12) = 2$$
