

تکلیف‌های کلاسی

①

$$1) f = u + [u] = y$$

$$\hookrightarrow [u + [u]] = (y)$$

$$[u] + [u] = y \Rightarrow [u] = \frac{y}{2}$$

$$\hookrightarrow f = u + \frac{[y]^2}{2} = y$$

$$\Rightarrow f'(u) = y + \frac{[u]}{2}, u$$

$$y = u - \frac{[u]}{2}$$

$$\text{پس } u - \frac{[u]}{2} = u + [u]$$

$$\Rightarrow 0 = [u] + \frac{[u]}{2} \rightarrow 2[u] + [u] = 0$$

$$3[u] = 0$$

$$\Rightarrow [u] = 0$$

$$\Rightarrow u \in [0, 1)$$

✓ که صحیح است

$$b) f \circ f^{-1}(u) = u \Rightarrow u = \frac{3}{2} \rightarrow u = \frac{3}{2}$$

$$\hookrightarrow u \in D_{f^{-1}} = R_f$$

بدین تابع f از عدد زوج n عدد فرد

بعد است یعنی $\frac{3}{2} = u$ غلط مر باشد و جواب صحیح است!

$\Rightarrow u$

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2) $y = \frac{ax + p}{bx + c} \rightarrow ax + p = y(bx + c)$

$bx + c = -b \Rightarrow x = \frac{-b}{c}$

میانگین = $\frac{a}{c}$ جانب قائم

نقطه اشتراک = $y = x \Rightarrow (\frac{a}{c}, \frac{a}{c}) = (\frac{-b}{c}, \frac{-b}{c})$

$\Rightarrow \frac{a}{c} = \frac{-b}{c} \Rightarrow a = -b$

$y = \frac{bx + p}{bx + c} \quad b + (-b) = 0$

$\Rightarrow$ $f(b - \sqrt{4}) = b - \sqrt{4}$ ✓

3) $f(x) = \frac{ax + p}{x + m + p} = y$

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

$\Rightarrow f^{-1}(x) = \frac{x - m}{(x + p)x + p}$

$\Rightarrow \frac{ax + p}{x + m + p} = \frac{x - m}{(x + p)x + p}$

$\Rightarrow 0 = (x^2)(p + m) + x(4m + p) - 9 = 0$

$x \rightarrow -9 \quad \therefore \frac{-4m - p}{p + m}$

$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} \Rightarrow \frac{(4m + p)}{-9} = \frac{p(m + 1)}{-9}$

$\alpha\beta \rightarrow -9$

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$\Rightarrow \frac{p(m + 1)}{p}$

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$$f(x) = |x+1| - |x-1| \quad (1, 2)$$

$x+1 = 0 \Rightarrow x = -1$ $x-1 = 0 \Rightarrow x = 1$

$x < -1$	$-1 < x < 1$	$x > 1$
$-x-1$	$x+1$	$-x-1$

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

$x \in \mathbb{R} \Rightarrow R = (-\infty, 1, 1)$

$$D_{f^{-1}} = R_f = x \leq \frac{19}{2}$$

$$D_{f^{-1}} = R_f$$

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

$$D = (-\infty, 1, 1)$$

$$b) y = f(x) = 1 \Rightarrow \frac{x+1}{2} = f(y)$$

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

$$(1, 1, 1)$$

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

$$a = \frac{1}{2} / b = 1 / c = 1 / d = 1$$

$$\frac{ac+d}{b} = \frac{1}{2} = \frac{1}{2} \cdot \frac{1}{1}$$

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4) $f(x) = x + \sqrt{x}$

$u, v \Rightarrow D = (0, +\infty)$

$u, v \Rightarrow R = (-\infty, +\infty)$

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

$\Rightarrow x(1) = \dots$ (2)

$\hookrightarrow x(1)(\sqrt{x}) \Rightarrow (\sqrt{x} + 1)^p - 1$

$\Rightarrow x = (\sqrt{y+1})^p - 1$

$\Rightarrow x+1 = (\sqrt{y+1})^p \Rightarrow \sqrt{x+1} = \sqrt{y+1}$

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

$\Rightarrow y = (\sqrt{x+1} - 1)^p$ ✓

$D = (-\infty, +\infty)$ ✓

$R f(x) = D g(x)$

5) $y = x - 1 + \sqrt{x}$ (2)

$x - 1 + \sqrt{x} = x$

$\Rightarrow \sqrt{x} = 1 \Rightarrow x = 0$ ✓

مميز 9 و 1

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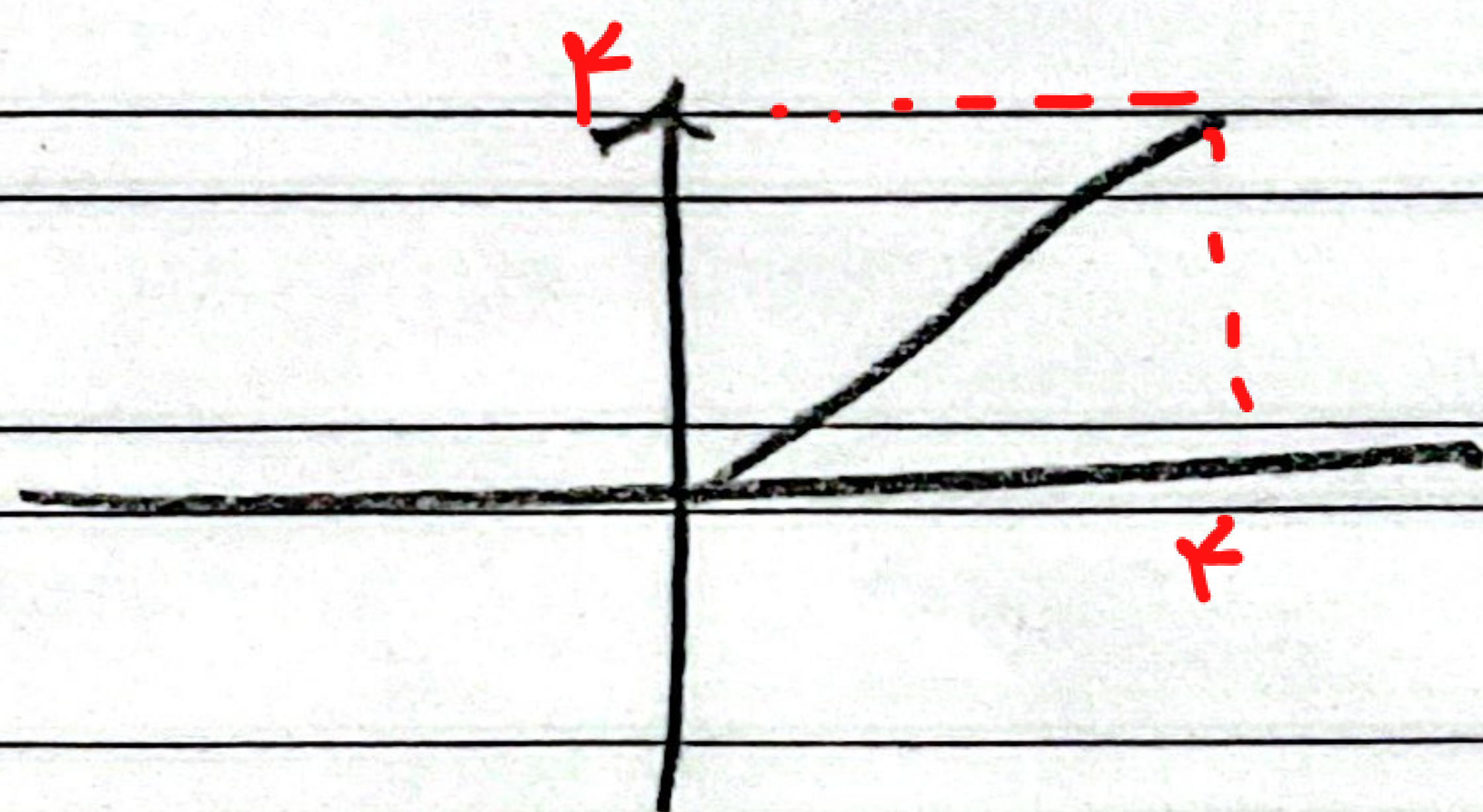
$$\sqrt{x} + \sqrt{y} = 1$$

(1, 1) (0, 1)

$$\sqrt{y} = 1 - \sqrt{x} \Rightarrow y = (1 - \sqrt{x})^2$$

$$x \in [0, 1] \quad y \in [0, 1]$$

$$R = D \Rightarrow f^{-1} = f \Rightarrow \text{نیمه باز است} \Rightarrow x = y$$



دایره روشنی است!

توابع هموار فیک آنه درون خود را قطع کنند، کل تقاطع روی نیمه باز اول و دوم

است!

$$\frac{mx + n}{x + m + n} = u \rightarrow x^2 + nx - n = 0$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{S}{P} = \frac{-n}{-n} = 1$$