

۱۸/۲۵

نام و نام خانوادگی: حسین حاجی حسینی پاسخنامه تشریحی تکلیف شماره ۱ کلاس: B

الف: $m=3 \Rightarrow n=2$ ✓

(۲)

ب) $a: -1 \Rightarrow n=2$ ✓
 $m=2$

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$3n-1 \xrightarrow{+1} 2 \Rightarrow n+a \leq 2 \Rightarrow 1+a \leq 2 \Rightarrow a = [-\infty, 1]$ ✓
باز

(۲)

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$3n-1 \xrightarrow{+1} 2 \Rightarrow a(n+a-1) \leq 2 \Rightarrow a(n+a) \leq 2 \Rightarrow a(n+1) \leq 2 \Rightarrow a \leq \frac{2}{n+1}$ ✓
 $a = (-\infty, \frac{2}{n+1})$
نیب a - $a(n+a)$ همباز + باشد
در نه یب بیگانه! $a > 0$

(۱)

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$0 < a < 3$

الف) $y_1 = y_2 \Rightarrow n^2 + 4 = n^2 - 4 \Rightarrow n_1^2 = n_2^2 \Rightarrow n_1 = n_2$ ✓
رقت! $n^2 = y + 2 \Rightarrow n = \sqrt{y+2} \Rightarrow y = n^2 - 2$

(۱, ۷, ۵)

ب) $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ مرکز $\frac{2}{2} = 1 \Rightarrow 4 - 8 + 2 = -2$ ✓
تابع یک به یک نیست ✓

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الف) $y = \frac{2n+1}{n-2}$ ✓
ب) $\frac{4+2n}{n+2} - \frac{2(2+n)}{(n+2)} = y = 2 \Rightarrow y = 2$ ✓

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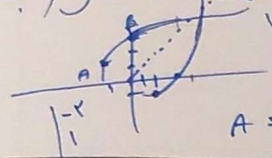
ب) $\frac{4+2n}{n+2} - \frac{2(2+n)}{(n+2)} = y = 2 \Rightarrow y = 2$ ✓
فاصله مرکز $n=2$

ا) انت

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

(2)

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



$A = \begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} = 1$

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

طالع

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

$\rightarrow x = y + \frac{2}{t} - \sqrt{y + \frac{1}{t^2}} \rightarrow f^{-1}(x) = x + \frac{1}{y} - \sqrt{y + \frac{1}{t^2}} \Rightarrow a = 1, b = \frac{1}{y}, c = -\frac{1}{t}$

$f^{-1}(x) = a + b - \sqrt{x - c} \Rightarrow 1 + \frac{1}{y} - 1 = 1$

$y_1 = y_2 \Rightarrow \frac{x_1}{\sqrt{x_1^2-1}} = \frac{x_2}{\sqrt{x_2^2-1}} \Rightarrow x_1^2(x_2^2-1) = x_2^2(x_1^2-1) \Rightarrow x_1^2 = x_2^2 \Rightarrow x_1 = \pm x_2$

(1, 2, 3)

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

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

$\frac{x}{1+|x|} = f^{-1}(x) \Rightarrow f(-\frac{x}{1+|x|}) = \frac{x}{1+|x|} = -\frac{x}{1+|x|} \Rightarrow -1-1|x| = 0 \Rightarrow 0x+1|x| = -2$

$x > 0 \rightarrow 1|x| = -2 \Rightarrow x = -\frac{2}{1}$

$-\frac{1}{2} + \frac{9}{20} = \frac{-10 + 9}{20} = \frac{-1}{20}$

(2)

$\sqrt{x-1} = -\frac{1}{2} \Rightarrow \sqrt{x} = \frac{1}{2} \Rightarrow x = \frac{1}{4}$

دقت!

$f(x) = x^2+1 \Rightarrow g(x) = x^2+1 + \sqrt{x^2+1} \Rightarrow 1 = x^2+1 + \sqrt{x^2+1} \Rightarrow x^2 = -1$

$g^{-1}(1) = \sqrt{-1}$

$x = 2$

(1, 2, 3)