

زهراسراچی ۱۸/۱۰
سوال ۱) تابع $y_1^2 = y_2^2 \sqrt{\dots}$

$$\left. \begin{aligned} y_1^2 &= 2x^2 + x \\ y_2^2 &= 2x^2 + x \end{aligned} \right\} \rightarrow y_1^2 = y_2^2$$

تابع نیست. $|y| + x^2 = x + 3 \rightarrow x=0 \rightarrow |y| + 0 = 3 \rightarrow |y| = 3 \rightarrow y = \pm 3 \times$

تابع هست $\checkmark$
 $\sqrt{x-4} + |y-2| = 0 \rightarrow$ هر دو صفر $x-4=0 \rightarrow x=4$
 $y-2=0 \rightarrow y=2$

تابع نیست $\times$
 $x = \cos y \rightarrow$ مثال نقض $\rightarrow x=0$
 $|0| \quad |0| \rightarrow 90, 270 \rightarrow 1, -1$

سوال ۲) الف) $\frac{x+4}{x^2-4x} \rightarrow x^2-4x > 0 \rightarrow x(x-4) > 0 \rightarrow \boxed{x < 0} \quad \boxed{x > 4}$
 $D_f: \mathbb{R} - \{4, 0\}$

ب) $\frac{x+4}{x^2-\sqrt{x}+14}$
 $\Delta = b^2 - 4ac = 4 - 4(1)(14) = -48$
 ریشه ندارد. $D_f: \mathbb{R}$

ج) $\frac{x+4}{x^2+x+4}$
 $\Delta = 1 - 4(1)(4) = -15$
 ریشه ندارد $D_f: \mathbb{R}$

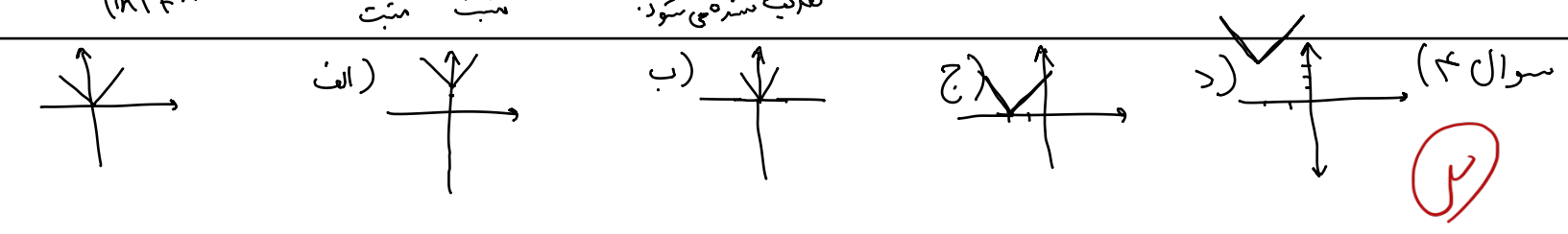
د) $\frac{x+4}{x^4-4x^2}$
 $x^4-4x^2 > 0 \rightarrow x^2(x^2-4) > 0 \rightarrow$
 $x=0$
 $(x-2)(x+2)$
 $x=2$
 $x=-2$
 $D_f: \mathbb{R} - \{2, -2, 0\}$

سوال ۳) الف) $\sqrt{4-x} + \sqrt{x-2}$
 $4-x \geq 0 \rightarrow x \leq 4$
 $x-2 \geq 0 \rightarrow x \geq 2$
 $D_f: [2, 4]$

ب) $\frac{2x+1}{x^2+1}$
 $x^2+1 = 0 \rightarrow x^2 = -1$
 ریشه ندارد $D_f: \mathbb{R}$

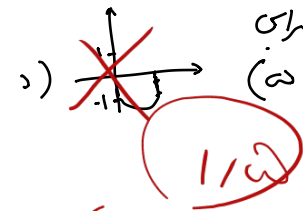
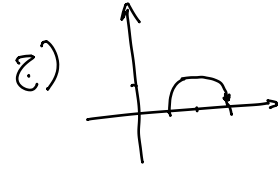
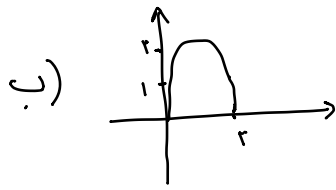
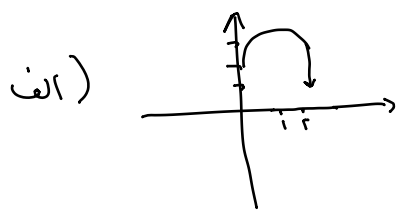
ج) $\frac{\sqrt{x-2}}{x-4}$
 $x-4 = 0 \rightarrow x \neq 4$
 $x-2 \geq 0 \rightarrow x \geq 2$
 $D_f: [2, +\infty) - \{4\}$

د) $\frac{2x+3}{|x|+x^2}$
 $|x|+x^2 = 0$
 $|x| \geq 0$
 $x^2 \geq 0$
 $D_f: \mathbb{R} - \{0\}$
 اگر صفر نگذاریم کسر
 تعریف نشده می شود

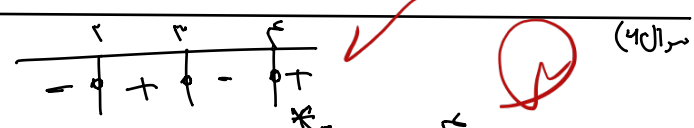


زهدا سرابی

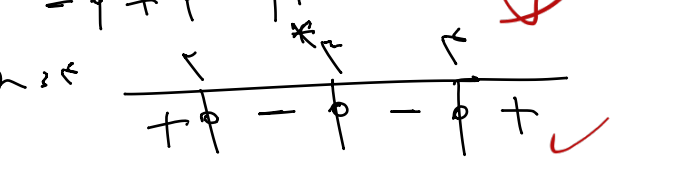
مسال ۵



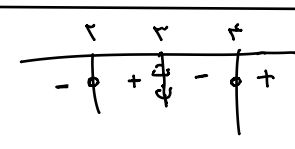
الف) $(x-2)(x-3)(x-4) \rightarrow x_1=2 \mid x_2=3 \mid x_3=4$



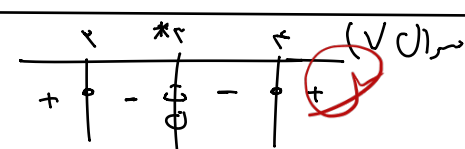
ب) $(x-2)(x-3)^2(x-4) \rightarrow x_1=2 \mid x_2=3 \mid x_3=4$



الف) $y = \frac{(x-2)(x-4)}{(x-3)^2}$



ب) $\frac{(x-2)(x-4)}{(x-3)^2}$



الف) $\frac{x^2-3x+2}{x-3} = \frac{(x-1)(x-2)}{x-3}$

ب) $\frac{x^2-3x+2}{x^2-4x+3} = \frac{(x-1)(x-2)}{(x-1)(x-3)} = \frac{x-2}{x-3}$

Sign chart for $\frac{x-2}{x-3}$: x-axis has points 2 and 3. Signs: + for x < 2, - for 2 < x < 3, + for x > 3.

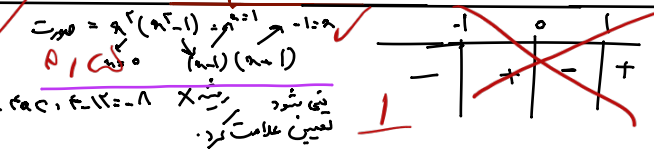
مسال ۸

$(x-1)(x^2+x-2) = (x-1)(x+2)(x-1) = (x-1)^2(x+2)$

Sign chart for $(x-1)^2(x+2)$: x-axis has points -2 and 1. Signs: + for x < -2, - for -2 < x < 1, + for x > 1.

الف) $\frac{x^2(x^2-1)}{x^2+x+2} \rightarrow \Delta = b^2-4ac = 1-4(1)(2) = -7$ (no real roots)

ب) $\Delta = b^2-4ac = 9-14 = -5$ (no real roots)



الف) $y = \sqrt{\frac{x^2-1}{x^2-2}}$

ب) $\sqrt{\frac{x^2-14}{x^2-5x+4}}$

مسال ۱۰

$x^2-9 \rightarrow x(x^2-1) = x(x-1)(x+1)$

Sign chart for $x(x-1)(x+1)$: x-axis has points -1, 0, and 1. Signs: + for x < -1, - for -1 < x < 0, + for 0 < x < 1, - for x > 1.

الف) $x^2-1 = (x-1)(x^2+x+1) = x^2-1$

ب) $\sqrt{\frac{(x-4)(x+4)}{(x-4)(x-1)}}$



بازه دامنه؟

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