رضا قاسمی — ۱۵٫۵

۱- (۵)

$A \times B = \{(1,2)(1,3)(2,2)(2,3)(3,2)(3,3)\}$; $A\times B - B^2 = \{(1,2)(1,3)\}$

$B \times B = \{(2,2)(2,3)(3,2)(3,3)\}$

۲- (۲)

الف) $m^2 - m - 2 = 0$ ⟹ $m = -1$ ✓ ، $m = +2$ غ ق ق

ب) $m^2 - m - 2 = 0$ ⟹ $m = -1$ غ ق ق ، $m = +2$ ق ق ✓ ← به ازای صحیح مقدار

۳- (۲)

$n = 1 \Rightarrow a + b = 0$

$n = 2 \Rightarrow 2a + b = 8$

$\Rightarrow a = 8$ ، $b = -8$

$\Rightarrow ab = -64$ ✓

۴- (۲)

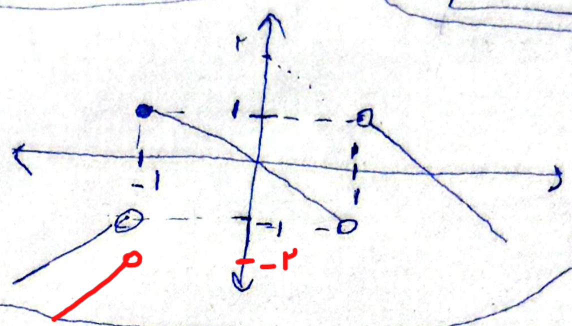
$n = K \Rightarrow 2K - 3 = 4 - 3K$

$\Rightarrow 5K = 7 \Rightarrow K = \frac{7}{5}$ ✓

۵- (۱٫۷۵)

$D_f = R - \{1\}$ ✓

$R_f = (-\infty, 1]$



۶- (۲)

الف) $y_1^3 = \frac{-1-x^2}{2}$ ، $y_2^3 = \frac{-1-x^2}{2}$ $\Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ تابع هست ✓

ب) $x^2 - 2x + 1 + 4y^2 - 12y + 9 = (x-1)^2 + (2y-3)^2 = 0 \Rightarrow (1, \frac{3}{2})$ تابع هست ✓

۷- (۲)

الف) $x = 0\ rad \Rightarrow 0 \times \sin y = y \times 0$ ⟸ تابع نیست ، y می‌تواند هر مقداری باشد ✓

ب) توان ۲: $\frac{x}{y} + \frac{y}{x} + 2 = 4 \Rightarrow \frac{x^2+y^2}{xy} = 2 \Rightarrow x^2 - 2xy + y^2 = 0$

$\Rightarrow (x-y)^2 = 0 \Rightarrow x = y \Rightarrow$ تابع هست ✓

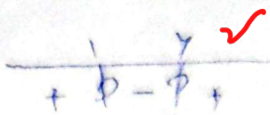
۸- (۲)

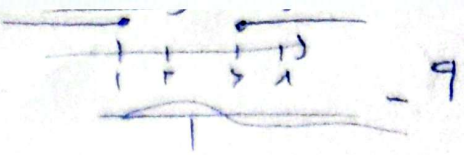
الف) $\Rightarrow (0, 1]$ ✓

ب) $x \geq 0$ ، $\sqrt{3} - \sqrt{x} \geq 0 \Rightarrow \sqrt{x} \leq \sqrt{3} \Rightarrow x \leq 3$

$\Rightarrow [0, 3]$ ✓

الف) $\sqrt{\frac{(x-1)(x-4)}{(x-2)(x-3)}}$ (۱٫۲۵)





$\Rightarrow D_f = (-\infty, 2] \cup [3, +\infty)$

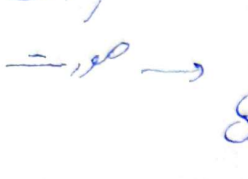
$x - 10x + 16 = -9x + 16 \rightarrow x < \frac{16}{9}$

$D = (-\infty, 1]$

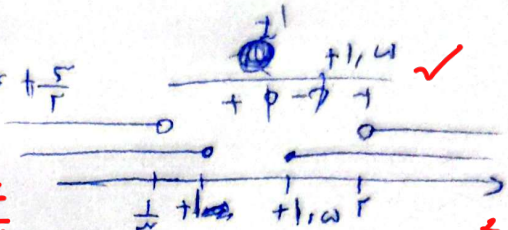
ب) $\sqrt{\frac{(x-1)(x-4)}{(x-2)(x-3)}}$

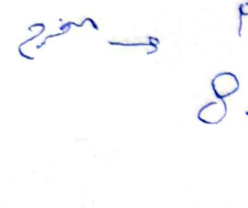
$\Rightarrow (-\infty, 1] \cup [2, 3) \cup [4, +\infty)$ ✓

الف)

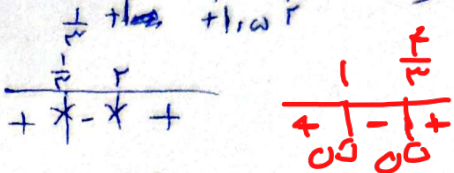


$\delta = -\infty$ (۰٫۵)





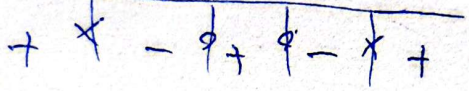
$\delta = +\infty$



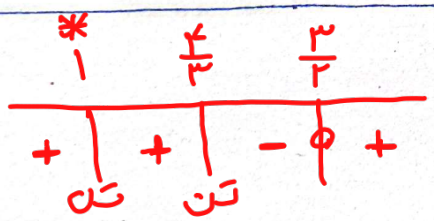
$\Rightarrow D_f = (-\infty, \frac{1}{2}) \cup (2, +\infty)$

$D = (-\infty, 1) \cup [\frac{3}{2}, +\infty)$

ب) به شکل قبلی $\Rightarrow$



$\Rightarrow (-\infty, \frac{1}{2}) \cup [1, 1.5] \cup [2, +\infty)$



$D = (-\infty, 1) \cup (1, \frac{4}{3}) \cup [\frac{3}{2}, +\infty)$