

الف) $2x^2 - 5x - 6 = 0 \rightarrow x^2 - 5x - 6 = 0 \rightarrow (x-6)(x+1) \rightarrow x_1 = 6, x_2 = -1$

ب) $2x^2 - 11x - 6 = 0 \rightarrow x^2 - 11x - 6 = 0 \rightarrow (x-12)(x+1) \rightarrow x_1 = 12, x_2 = -1$

ج) $2x^2 - 5x - 6 = 0 \rightarrow x^2 - 5x - 6 = 0 \rightarrow (x-6)(x+1) \rightarrow x_1 = 6, x_2 = -1$

د) $2x^2 - 5x - 6 = 0 \rightarrow x^2 - 5x - 6 = 0 \rightarrow (x-6)(x+1) \rightarrow x_1 = 6, x_2 = -1$

الف) $x^2 - 5x - 6 = 0 \rightarrow \Delta > 0 \rightarrow (x-6)(x+1) \rightarrow x_1 = 6, x_2 = -1$

ب) $2x^2 + 5x + 3 = 0 \rightarrow \Delta > 0 \rightarrow \Delta = 25 - 24 = 1 \rightarrow x_1 = -1, x_2 = -\frac{3}{2}$

ج) $x^2 + 2x + 2 = 0 \rightarrow \Delta < 0 \rightarrow 4 - 4(2) = -4 \rightarrow \Delta < 0 \rightarrow \text{ریشه ندارد}$

د) $2x^2 + 7x - 4 = 0 \rightarrow \Delta = 49 - 4(2)(-4) = 85 \rightarrow x_1 = \frac{-7 + \sqrt{85}}{4}, x_2 = \frac{-7 - \sqrt{85}}{4}$

$A = \{1, 2, 3\}, B = \{2, 3\}$

$A \times B = B^T$

$A \times B = (1, 2)(1, 3)(2, 2)(2, 3)(3, 2)(3, 3) \rightarrow (1, 2)(1, 3)(2, 2)(2, 3)(3, 2)(3, 3)$

$B \times B = (2, 2)(2, 3)(3, 2)(3, 3) \rightarrow (2, 2)(2, 3)(3, 2)(3, 3)$

الف) $(x, m), (x, m+2) \rightarrow m = m+2 \rightarrow m - m - 2 = 0 \rightarrow (m-2)(m+1) \rightarrow m_1 = 2, m_2 = -1$

ب) $m^2 = m+2 \rightarrow m^2 - m - 2 = (m-2)(m+1) \rightarrow m_1 = 2, m_2 = -1$

الف) $a^2 = 3a - 2 \rightarrow a^2 - 3a + 2 = 0 \rightarrow (a-2)(a-1) = 0 \rightarrow a_1 = 2, a_2 = 1$

ب) $a^2 = 3a - 2 \rightarrow a^2 - 3a + 2 = 0 \rightarrow (a-2)(a-1) = 0 \rightarrow a_1 = 2, a_2 = 1$

الف) $a + b = 0 \rightarrow a = -b$

ب) $2a + b = 1 \rightarrow b = 1 - 2a$

ج) $a + b = 0 \rightarrow a = -b$

د) $2a + b = 1 \rightarrow b = 1 - 2a$

$K \rightarrow 2(K) - 3 = 4 - 3(K)$
 اجابتهای صحیح
 $2K - 3 = 4 - 3K$
 $5K = 7 \rightarrow K = \frac{7}{5}$

سوال ۸) الف) $y^3 - 4y = u^3 - 4u + 3 \rightarrow u = 2 \quad y^3 - 4y = -1 \rightarrow y^3 - 4y + 1 = 0 \rightarrow$ معادله ۳ درجه دارد
 $\times$ پس تابع نیست

ب) $|x| + |y| = 3 \xrightarrow{u=0} |y| = 3 \rightarrow y = \pm 3$ برای دو مختصات مختلف
 $\times$ تابع نیست

ج) $|y| = \sqrt{1 - \cos u} \rightarrow y = \pm \sqrt{1 - \cos u} \rightarrow$ تابع نیست

د) $y^2 + u^2 + 2u + 1 = 0 \rightarrow y^2 + (u+1)^2 = 0 \xrightarrow{\text{بهر دو ضربه ضرب}} y = 0, u = -1$ تابع است

سوال ۹) الف) $\sqrt{y} + u^2 = 2u - 2 \quad (u_1, y_1) \in f \rightarrow u_1 = u_2 \quad y_1 = y_2 \quad \sqrt{y_1} + u_1^2 = 2u_1 - 2$
 $(u_2, y_2) \in f \rightarrow \sqrt{y_2} + u_2^2 = 2u_2 - 2$
 $\sqrt{y_1} = \sqrt{y_2} \quad u_1 = u_2$
 $\sqrt{y_1} = \sqrt{y_2} \rightarrow y_1 = y_2$

ب) $y + 2y = \Delta u \rightarrow y_1^2 + 2y_1 = \Delta u_1 \rightarrow y_1^2 + 2y_1 = y_2^2 + 2y_2 \rightarrow$
 $y_1 - y_2 = 0 \rightarrow y_1 = y_2$
 $y_1^2 + 2y_1 = \Delta u_1 \quad y_2^2 + 2y_2 = \Delta u_2 \quad (y_1^2 - y_2^2) + (2y_1 - 2y_2) \rightarrow (y_1 - y_2)(y_1 + y_2 + 2) + 2(y_1 - y_2)$
 $y_1^2 + y_2^2 + y_1 + y_2 + 2 = 0 \rightarrow \Delta = y_1^2 - (y_2^2 - 2)$

سوال ۱۰) الف) $\sin y = y \sin u \xrightarrow{u=0} 0 = \sin y = y \sin 0 \rightarrow 0 = 0$
 $\times$ $u=0$ بی نهایت مختصات دارد پس تابع نیست

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$ تابع است
 $u=1 \rightarrow \sqrt{\frac{1}{4}} + \sqrt{\frac{4}{1}} = \frac{1}{2} + 2 = 2.5 \neq 2$
 $y=4 \rightarrow \sqrt{\frac{4}{4}} + \sqrt{\frac{4}{4}} = 1 + 1 = 2 \checkmark$
 $u=4 \rightarrow \sqrt{\frac{4}{4}} + \sqrt{\frac{4}{4}} = 1 + 1 = 2 \checkmark$
 $y=16 \rightarrow \sqrt{\frac{4}{16}} + \sqrt{\frac{16}{4}} = \frac{1}{2} + 2 = 2.5 \neq 2$

این راه حل برای نشان دادن تابع بودن درست نیست باید با تست ریشه یا ... حل کردی!

۱۰-ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$

این عبارت تنها زمانی برابر است که $\sqrt{\frac{x}{y}} = 1$ باشد پس

$\sqrt{\frac{x}{y}} = 1 \Rightarrow \frac{x}{y} = 1 \Rightarrow x = y$ و $(x, y \neq 0)$

