

ارائه شده است

الف)  $4x^2 - 8x - 4 \rightarrow x^2 - 2x - 1 = 0 \rightarrow (x-3)(x+1) = 0 \rightarrow (x - \frac{3}{1})(x + \frac{1}{1}) = 0 \rightarrow \frac{3}{1} \text{ و } \frac{1}{1}$

ب)  $x^2 - 18x - 9 = 0 \rightarrow x^2 - 18x - 9 = 0 \xrightarrow{a+c=b} -1 \text{ و } 9 \rightarrow \frac{1}{9} \text{ و } \frac{1}{9}$

ج)  $x^2 - 5x - 14 = 0 \rightarrow x^2 - 5x - 14 = 0 \rightarrow (x-7)(x+2) = 0 \rightarrow \frac{7}{1} \text{ و } \frac{2}{1}$

د)  $x^2 - 8x - 14 \rightarrow x^2 - 8x - 14 = 0 \rightarrow (x-1)(x+13) = 0 \rightarrow \frac{1}{1} \text{ و } \frac{13}{1}$

الف)  $x^2 - 8x - 14 = (x-7)(x+2) = 0 \rightarrow -7 \text{ و } 2$

ب)  $a+c=b \Rightarrow \frac{3}{4} \text{ و } -1$

ج)  $x^2 + 2x + 3 = 0 \rightarrow \Delta = 4 - 12 = -8 < 0 \Rightarrow$  ریشه ندارد

د)  $x^2 + 4x - 4 = 0 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \frac{-4 \pm \sqrt{16 + 16}}{2} = \frac{-4 \pm \sqrt{32}}{2}$

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

الف)  $m^2 = m + 2 \text{ و } m \neq 2 \Rightarrow m = -1$   
 $\times (2, 1) \text{ و } (2, 2)$

ب)  $m^2 = m + 2 \text{ و } m \neq 2 \text{ و } m \neq -1 \rightarrow$  هیچ جوابی ندارد  
 $\times (2, 1) \text{ و } (2, 2) \rightarrow (-1, 2) \text{ و } (-1, 3)$

$a^2 = 2a - 2 \rightarrow a^2 - 2a + 2 = 0 \xrightarrow{a+b+c=0} 2 \text{ و } 1 \Rightarrow a = 2$   
 $(1, 1) \text{ و } (1, 2)$

if  $x=1 \rightarrow x^2 - 1 = a + b \rightarrow a + b = 0$

if  $x=2 \rightarrow x^2 = a + b \rightarrow 4 = a + b \Rightarrow a = 1 \text{ و } b = -1 \Rightarrow a \times b = -1$

if  $x=k \rightarrow 4x - 4 = 4x - 4 \rightarrow 8x = 4 \Rightarrow x = \frac{1}{2}$

الف) if  $x=1 : y^2 - 4y = 0 \rightarrow y(y-4) = 0 \rightarrow y = 0 \text{ و } 4 \rightarrow$  تابع نیست

ب)  $x=0 : |y| = 4 \rightarrow y = \pm 4 \rightarrow$  تابع نیست

ج)  $x = \frac{\pi}{2} : |y| = 1 \rightarrow y = \pm 1 \rightarrow$  تابع نیست

د)  $y^2 = -(x^2 + 2x + 1) \rightarrow y^2 = -(x+1)^2 \rightarrow x+1=0 \rightarrow x = -1 \text{ و } y=0 \rightarrow$  تابع نیست

(الف)  $\sqrt{y_1} = -x^2 + 2x - 2$   
 $\sqrt{y_2} = -x^2 + 2x - 2$  }  $\sqrt{y_1} = \sqrt{y_2} \rightarrow y_1 = y_2 \rightarrow$  تابع است  
 (توان بود علامت تغییر می ده)

ب)  $y_1^2 + y_1 = 2x_1$   
 $y_2^2 + y_2 = 2x_2$  }  $y_1^2 + y_1 = y_2^2 + y_2 \rightarrow y_1^2 - y_2^2 + y_1 - y_2 = (y_1 - y_2)(y_1 + y_2 + 1) + (y_1 - y_2) = 0$

$(y_1 - y_2)(y_1 + y_2 + y_1 + y_2 + 1) = 0$   
 $\Delta < 0$  مثبت  $\Rightarrow y_1 = y_2 \rightarrow$  تابع است

(الف) if  $x=0: y \sin x = 0 \rightarrow y \in \mathbb{R} \rightarrow$  تابع است

ج)  $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \rightarrow \frac{x}{y} + \frac{y}{x} + 2\sqrt{1} = 4 \rightarrow \frac{x}{y} + \frac{y}{x} = 2 \rightarrow \frac{x^2 + y^2}{xy} = 2 \rightarrow x^2 + y^2 = 2xy$

$\rightarrow x^2 + y^2 - 2xy = (x - y)^2 = 0 \rightarrow x = y \Rightarrow$  تابع است