

$$a^p - ax - 4 = 0$$

$$(x-4)(x+1)$$

$$x = \frac{4}{p} \text{ و } -\frac{1}{p}$$

$$b) x^p - ax - 4 = 0$$

$$(x-4)(x+1)$$

$$x = \frac{4}{p} \text{ و } -\frac{1}{p}$$

$$c) x^p - px - 1p = 0$$

$$= (x-4)(x+1)$$

$$x = \frac{4}{p} \text{ و } -\frac{1}{p}$$

$$d) x^p - ax - 4p = 0 \quad x = \frac{1}{p} \text{ و } -\frac{p}{p}$$

$$(x-1)(x+1)$$

$$e) x^p - ax - 1p = 0$$

$$(x-1)(x+1)$$

$$x = 1 \text{ و } -1$$

$$f) x^p + ax + 4 = 0 \rightarrow (x+1)(x+3) \rightarrow x = -\frac{1}{p} \text{ و } -\frac{3}{p}$$

$$g) px^p + px - 1 = 0$$

$$\Delta = 4 - 4(p)(-1) = 4p$$

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

$$h) x^p + px + 3 = 0$$

$$\Delta = 4 - 4(p)(3) = -12p$$

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

$$B^p = \{(2,2)(2,3)(3,2)(3,3)\}$$

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

$$i) f(x) \rightarrow m^p = m+1 \quad m^p - m - 1 = 0$$

$$(m-1)(m+1) = \frac{m=1}{m=-1} \rightarrow \boxed{m=-1} \checkmark$$

$$j) g(x) \rightarrow m^p = m+1 \rightarrow (m-1)(m+1) = 0 \rightarrow \begin{matrix} m=1 \\ m=-1 \end{matrix}$$

به ازای هیچ مقاری از m تابع نمی شود.

$$k) a^p = pa - 1 \rightarrow a^p - pa + 1 = 0$$

$$(a-1)(a-p)$$

$$\left\{ \begin{array}{l} a=1 \rightarrow \checkmark \\ a=p \rightarrow \checkmark \end{array} \right.$$

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

$$u = 2 \rightarrow u^2 = 2a + b \rightarrow 2a + b = 1$$

$$\begin{cases} a + b = 0 \\ 2a + b = 1 \end{cases} \rightarrow \begin{matrix} a = 1 \\ b = -1 \end{matrix}$$

$$a \times b = \boxed{-4}$$

$$u = k \rightarrow 2k - 3 = 4 - 3k \rightarrow 5k = 7 \rightarrow \boxed{k = \frac{7}{5}}$$

الف) $y^{\frac{3}{2}} \frac{dy}{dx} = x \rightarrow y^{\frac{3}{2}} - 4y = x$ تابع نیست

ب) $u = 1 \rightarrow |y| = 2 \rightarrow y = \pm 2 \rightarrow x$ تابع نیست

ج) $1 - \cos u \neq 0 \rightarrow \cos 2u \leq 1 \xrightarrow{\text{مثلاً}} |y| = 1 \rightarrow y = \pm 1 \rightarrow x$ تابع نیست

د) $y^2 + \underbrace{u^2 + 2u + 1}_{\text{هواره} + \text{''}} = 0 \rightarrow$ دوتایی باید صفر باشند
 $\rightarrow$ تذکره $\rightarrow$ تابع هست ✓

الف) $\sqrt[3]{y} = -u^2 + 2u - 2 \xrightarrow{y_1} \sqrt[3]{y_1} = -u^2 + 2u - 2 \xrightarrow{y_2} \sqrt[3]{y_2} = -u^2 + 2u - 2 \rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2}$
 $y_1 = y_2$ ✓ تابع هست

ب) $\begin{cases} y_1^3 + 2y_1 = 5u \\ y_2^3 + 2y_2 = 5u \end{cases} \rightarrow y_1^3 + 2y_1 = y_2^3 + 2y_2$
 $y_1^3 - y_2^3 = 2y_2 - 2y_1$
 $(y_1 - y_2)(y_1^2 + y_1y_2 + y_2^2) = -2(y_1 - y_2)$
 $(y_1 - y_2)(y_1^2 + y_1y_2 + y_2^2 + 2) = 0$
 $y_1^2 + y_1y_2 + y_2^2 + 2 \neq 0$
 $y_1 = y_2$ ✓ تابع هست

الف) $y = \frac{u \sin y}{\sin u} \rightarrow y_1 = y_2 \rightarrow \frac{u \sin y_1}{\sin u} = \frac{u \sin y_2}{\sin u}$
 $\sin y_1 = \sin y_2$ ✓ تابع نیست

ب) $\left(\sqrt{\frac{u}{y}} + \sqrt{\frac{y}{u}} = 2 \right)^2 = \frac{u}{y} + \frac{y}{u} + 2\sqrt{\frac{uy}{yu}} = 4$

$\frac{u^2 + y^2}{uy} = 2 \rightarrow u^2 + y^2 - 2uy = 0 \rightarrow (u - y)^2 = 0 \rightarrow u = y$ ✓ تابع هست