

1) $3x - y = 9 \rightarrow 3x = y + 9 \rightarrow x = \frac{y}{3} + 3$
 $x + 2y = -2$

$\frac{y}{3} + 3 = -2y - 2 \rightarrow \frac{y}{3} + 5y = -5 \rightarrow y = -1$
 $x = 2$

$\frac{x}{y} = -\frac{2}{1}$

2) $\frac{1}{x} - \frac{1}{y} = -1 \rightarrow \frac{1}{x} = \frac{1}{y} - 1 \rightarrow \frac{\partial}{\partial x} = \frac{\partial}{\partial y} - d$

$\frac{\partial}{\partial x} - \frac{\partial}{\partial y} = -2 \rightarrow \frac{\partial}{\partial x} = \frac{\partial}{\partial y} - 2$

$\frac{\partial}{\partial y} - 2 = \frac{\partial}{\partial y} - d$

$\frac{\partial}{\partial y} = -2 \rightarrow y = -1$

$x = -\frac{1}{2}$

$\frac{x}{y} = \frac{-\frac{1}{2}}{-1} = \frac{1}{2}$

$a = -2 \rightarrow a = -2$

$f = \{(-2, -6), (1, -4), (2, b)\}$

$f(x) = 3f(x) - f(a)$

$3 \times (-2) - (-6) = -6 + 6 = 0$

$f(x) = 0 \rightarrow b = 0$

$m^2 - 2m = -2 \rightarrow m^2 - 2m + 2 = 0$
 $m = 1 \vee m = 2$

$f(m=1) \rightarrow (2, 6) (2, 6)$ \rightarrow x \rightarrow x
 $f(m=2) \rightarrow (3, 6) (3, 5)$ \rightarrow x \rightarrow x

3- هیچ مقدار

تابعیت زیرا به از این مقدار دو تا جواب داریم



4- الف)

تابعیت زیرا از نوع کس می باشد.



ب)

تابعیت زیرا به از این مقدار یک جواب حاصل می شود



ج)

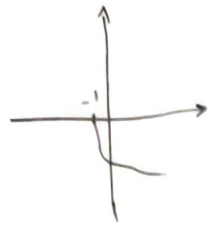
تابعیت ← از نوع تابع قدر مطلق



د)

انك $y = -\sqrt{x+1}$

تابعات زوج



تابع نیت

$x = \frac{y}{\sqrt{1-y^2}}$

if $x=1 \rightarrow y = \sqrt{1-y^2} \rightarrow y^2 = 1-y^2$

$2y^2 = 1$

$y^2 = \frac{1}{2} \rightarrow y = \pm \frac{1}{\sqrt{2}}$

تابع $y = x$ if $x=1 \rightarrow |y|=1 \rightarrow y = \pm 1$

$$\begin{aligned} y_1^3 + 3y_1^2 y_2 + 3y_1 y_2^2 + y_2^3 &= -x^3 - 1 \\ y_1^3 + 3y_1^2 y_2 + 3y_1 y_2^2 + y_2^3 &= -x^3 - 1 \end{aligned} \rightarrow y_1(y_1^2 + 3y_1 y_2 + 3y_2^2 + y_2^3) = y_2(y_2^2 + 3y_1 y_2 + 3y_1^2 + y_1^3)$$

$$y_1 = y_2$$

تابع است

$$f(x) = \frac{x(x+\epsilon) + \delta}{x(x+\epsilon) + \nu} \rightarrow \frac{(\sqrt{3}-2)(\sqrt{3}+2) + \delta}{(\sqrt{3}-2)(\sqrt{3}+2) + \nu} = \frac{3-\epsilon+\delta}{3-\epsilon+\nu} = \frac{\epsilon}{\nu} = \frac{2}{\sqrt{3}}$$

$x = 3x - a \rightarrow x - \epsilon = -2x + a \rightarrow a = 1$

$-2x = -1 - 1 + b \rightarrow b = -2$

$x^2 + x = 2 = 3x - 1$

$x^2 - 2x - 1 = 0$

$(x+1)(x^2 - x + 1) = 0$

جمع کنیم: $+1$

1-1

$x + b = 2x \rightarrow a = b$

$a - 2a + 1 = 2a \rightarrow -2a + 1 = 0 \rightarrow a = \frac{1}{2}$

$$\frac{\epsilon x^2 - ax + c + 1}{bx + \nu} = x \rightarrow \epsilon x^2 - ax + c + 1 = bx^2 + \nu x$$

$b = \epsilon$

$-a = \nu \rightarrow a = -\nu$

$c + 1 = 0 \rightarrow c = -1$

$a + b + c$

$-3 + \epsilon - 1 = 0$