

تابع هست. $|y| = x \quad x = 1 \Rightarrow y = \pm 1$

ب) $\rightarrow \begin{cases} y_1^2 + 3y_1^2 + 3y_1 = -x^2 + x \\ y_2^2 + 3y_2^2 + 3y_2 = -x^2 - x \end{cases} \Rightarrow y_1^2 + 3y_1^2 + 3y_1 = y_2^2 + 3y_2^2 + 3y_2$
 $\Rightarrow y_1^2 - y_2^2 = 3y_2^2 - 3y_1^2 + 3y_2 - 3y_1 \Rightarrow (y_1 - y_2)(y_1^2 + y_2^2 + y_1 y_2) = (y_2 - y_1)(3 + 3(y_1 + y_2))$
 $\Rightarrow (y_1 - y_2)(y_1^2 + 3y_2^2 + y_1 y_2 + y_2^2 + 3y_1 + 3) = 0 \Rightarrow y_1 = y_2$ تابع هست.
 $\Delta < 0 \quad \Delta = 0 \Rightarrow \begin{cases} y_1 = -1 \\ y_2 = -1 \end{cases} \Rightarrow y_1 = y_2$

$f(x) = \frac{(x+2)^2 + 1}{(x+2)^2 + 3} \Rightarrow f(\sqrt{3}-2) = \frac{\sqrt{3}^2 + 1}{\sqrt{3}^2 + 3} = \frac{4}{6} = \frac{2}{3}$ تابع

7

$y = 3x - a \quad |_{-1}^{-1} \Rightarrow -1 = -3 - a \Rightarrow a = 1$

$f(x) = x^2 + x + b \quad |_{-1}^{-1} \Rightarrow -1 = -1 - 1 + b \Rightarrow b = -1$

$\Rightarrow x^2 + x - 1 = 3x - 1 \Rightarrow x^2 - 2x - 1 = 0 \Rightarrow (x+1)(x^2 - x - 1) = 0$

$x^2 - x - 1 = 0 \Rightarrow x = \begin{cases} x_1 \\ x_2 \end{cases} \quad x_1 + x_2 = S = \frac{-b}{a} = 1$ تابع

8

چون تابع ثابت است همه مولفه‌های روم برابر اند.

$a + b = 3a \Rightarrow a = b$

$3a = a - 2b + 1$

$3a = a - 3a + 1$

$3a = 1$
 $\boxed{a = \frac{1}{3}}$ تابع

9

$f(x) = \frac{3x^2 - ax + c + 1}{bx + 3} = x \Rightarrow 3x^2 - ax + c + 1 = bx^2 + 3x$

$\Rightarrow \begin{cases} b = 3 \\ -a = 3 \Rightarrow a = -3 \\ c + 1 = 0 \Rightarrow c = -1 \end{cases}$

$\Rightarrow a + b + c = 0$ تابع

10