

$$\beta^2 - 5\beta + 2 = 0 \Rightarrow \beta^2 = 5\beta - 2 \quad \beta^3 = \beta \times \beta^2 = \beta(5\beta - 2) = 5\beta^2 - 2\beta \Rightarrow 5(5\beta - 2) - 2\beta \Rightarrow \beta^3 = 23\beta - 10 \quad \#$$

$$\beta^5 = \beta^2 \times \beta^3 \Rightarrow \beta^5 = (5\beta - 2)(23\beta - 10) = 115\beta^2 - 94\beta + 20 \Rightarrow \beta^5 = 679\beta - 190$$

$$\alpha + \beta = -\frac{b}{a} \Rightarrow \alpha + \beta = 5 \Rightarrow \alpha = 5 - \beta$$

$$\frac{4\alpha + \beta^5}{5\beta^2} \xrightarrow{\Delta, 0, \star} \frac{20 - 4\beta + 679\beta - 190}{25\beta - 10} = \frac{675\beta - 170}{25\beta - 10} = \frac{90(5\beta - 2)}{5(5\beta - 2)} = 18$$

$$y = au^2 + bu + c \quad (-1.5, -4), (2, -4) \quad \begin{cases} -4 = 9a + 3b + c \\ -4 = 4a - 1.5b + c \end{cases}$$

$$\Rightarrow 9a + 3b + c = 4a - 1.5b + c \Rightarrow -4.5a = -4.5b \Rightarrow b = a$$

$$f = \frac{-b}{a} = \frac{1.5a}{a} = 1.5$$

$$\text{اقتلاص} = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{4k^2 - 20}}{1} = 2\sqrt{k^2 - 5} = \frac{4}{3}K$$

$$\Rightarrow 4k^2 - 20 = \frac{16}{9}K^2 \Rightarrow K^2 - 5 = \frac{4}{9}K^2 \Rightarrow 9K^2 - 45 = 4K^2 \Rightarrow 5K^2 = 45 \Rightarrow K^2 = 9$$

$$[\frac{K^2}{2}] \xrightarrow{K^2=9} [\frac{K^2}{2}] = [4.5] = 4.5$$

$$\text{میانگین} = \text{Mean} = \frac{3 + (-5)}{2} = -1 \Rightarrow \frac{\alpha + \beta}{2} = -1 \Rightarrow \alpha + \beta = -2$$

$$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta \Rightarrow 5 = 4 - 2\alpha\beta \Rightarrow \alpha\beta = -\frac{1}{2}$$

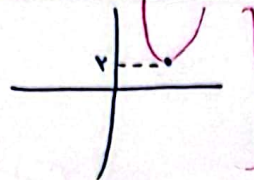
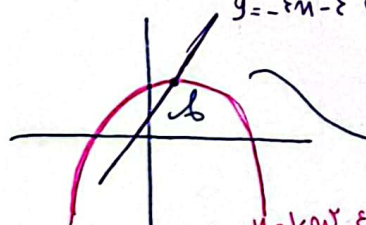
$$y = (k - u)(\alpha - \beta) \xrightarrow{1 = \text{میانگین}} u = \frac{\alpha + \beta}{2} = -1 = (-k - 1)(\alpha - \beta)$$

$$\Rightarrow k = -\frac{2}{3} \quad k \times \beta = (-\frac{2}{3})(-\frac{1}{2}) = \frac{1}{3}$$

$$-(u^2 - 5u - m) = 0 \Rightarrow u = \frac{5 \pm \sqrt{25 + 4m}}{2} \quad u < \frac{9}{2} \Rightarrow 5 \pm \sqrt{25 + 4m} < 9$$

$$\Rightarrow \sqrt{4m + 25} < 4 \Rightarrow 4m + 25 < 16 \Rightarrow m < -2.25 \quad \Rightarrow -2.25 < m < -4.25$$

$$\text{فرکانس مثبت} = \text{دایره درجه} \Rightarrow \Delta > 0 \Rightarrow 25 + 4m > 0 \Rightarrow m > -6.25 \Rightarrow m = -6.25 - 4.25 - 3 = -13.5$$

صورت سوار چون نقطه مشترک پس min داراست 	$y_{cut} = \frac{-\Delta}{f_a} = \frac{-(144 - 4(5m-1)(m))}{f_m} = 2$ $\Rightarrow \frac{20m^2 - f_m - 144}{f_m} = 2 \Rightarrow 20m^2 - f_m - 144 = 2f_m$ $y = m^2 - 12m + 4m - 1 \xrightarrow{m=2}$ $y = 3m^2 - 12m + 14 \Rightarrow \text{نقطه مشترک} = y_{cut}$ $= \frac{12}{4} = 2$ $\Rightarrow 20m^2 - 12m - 144 = 0 \Rightarrow m = \begin{cases} 3 \\ -\frac{12}{5} \end{cases}$ چون $m=0$ و $m=3$ min داراست پس m میبایستی باشد	۶
$\alpha \cdot \beta = \frac{c}{a} \Rightarrow \alpha \beta = 2a - 1$, $\alpha + \beta = \frac{-b}{a} \Rightarrow \alpha + \beta = -2(a+1)$, $\alpha \beta = a^2$ $\Rightarrow a^2 = 2a - 1 \Rightarrow a^2 - 2a + 1 = 0 \Rightarrow a = 1$	فرض می‌کنیم	۷
$x = t \Rightarrow t^2 - vt - a = 0 \Rightarrow p = \frac{c}{a} = \frac{-d}{1} = -d$ $t = \frac{v \pm \sqrt{4a}}{2} \Rightarrow x^2 = \frac{v \pm \sqrt{4a}}{2}$ $2p^2 - 3sp + 2s \xrightarrow{s=0, p=-d} 2d^2 - 0 + 0 = 2d^2$	$\Rightarrow x = \begin{cases} + \sqrt{\frac{v + \sqrt{4a}}{2}} \\ - \sqrt{\frac{v + \sqrt{4a}}{2}} \\ + \sqrt{\frac{v - \sqrt{4a}}{2}} \\ - \sqrt{\frac{v - \sqrt{4a}}{2}} \end{cases} \quad S=0$	۸
 $y = -x^2 - 4x$ $y = kx^2 - 4x - 4$ $y_A = \frac{-\Delta}{f_a} \Rightarrow \frac{-(14 - 4(-4k))}{4k} = \frac{-4 - 4k}{k}$	$x_L = \frac{-b}{2a} \Rightarrow x_L = \frac{2}{1k}$ $-f_{x_A} - 4 = 1x_A^2 - 4x_A - 4$ $\Rightarrow -f\left(\frac{2}{k}\right) - 4 = k\left(\frac{2}{k}\right)^2 - f\left(\frac{2}{k}\right) - 4$ $\Rightarrow \frac{-1}{k} - 4 = \frac{f}{k} - \frac{1}{k} - 4$ $\Rightarrow -1 - 4k = \frac{f-1-4k}{-f} \Rightarrow k = 2$ $\xrightarrow{k=2} \frac{-4-12}{2} = -8$	۹
$-m - n = -m^2 + m + 1$ $\Rightarrow m^2 - m - 1 - m - 1 = 0 \Rightarrow m^2 - 2m - 2 = 0$ $\Rightarrow \Delta > 0 \Rightarrow m^2 + 2m + 1 - f(m(-m-1)) > 0 \Rightarrow m^2 + 2m + 1 + f_m^2 + f_m > 0$ $\Rightarrow 4m^2 + 4m + 1 > 0 \Rightarrow m < -\frac{1}{2}$	$\Rightarrow \frac{m^2}{a} - \frac{(m+1)m}{b} - \frac{m-1}{c} = 0$ $\Rightarrow m^2 + 2m + 1 + f_m^2 + f_m > 0$ $\Rightarrow 4m^2 + 4m + 1 > 0 \Rightarrow m < -\frac{1}{2}$ اینجایی که $m < -\frac{1}{2}$ میبایستی باشد.	۱۰