

$g = x^2 - 4x + 7 \rightarrow C = 7, \Delta > 0$ $\Delta = b^2 - 4ac \rightarrow 16 - 28 = -12 < 0$ (اشکال) $x_3 = -\frac{b}{2a} = \frac{4}{2} = 2$ $\hookrightarrow (2, 3)$ $y = -x^2 + 4x - 1$	1
$2x^2 + (m+1)x + \frac{1}{m}m + 2 = 0 \rightarrow a = 2, b = m+1, c = \frac{1}{m}m + 2$ $\Delta = b^2 - 4ac \rightarrow (m+1)^2 - 4(2)(\frac{1}{m}m + 2)$ $\rightarrow \Delta = m^2 - 2m - 15$ $\Delta > 0 \rightarrow m^2 - 2m - 15 > 0 \xrightarrow{\Delta=0} m = \frac{2 \pm \sqrt{4+60}}{2} = \frac{2 \pm 8}{2} \rightarrow m = 5 \text{ or } m = -3$ $\Delta = 0 \rightarrow m^2 - 2m - 15 = 0 \rightarrow m = -3, 5 \rightarrow x = \frac{-(m+1)}{2a}$ $\Delta < 0 \rightarrow m^2 - 2m - 15 < 0 \rightarrow -3 < m < 5$ (دقیقه) (الف) $m = 5 \rightarrow m < -3, m > 5$ (ب) $m = 5 \rightarrow m = -3 = \frac{1}{m}$ (ج) $\Delta \geq 0 \rightarrow m \leq -3 \text{ or } m \geq 5 \rightarrow \frac{-(m+1) \pm \sqrt{m^2 - 2m - 15}}{2}$	2
$(m-2)x^2 - 2(m+1)x + 10 = 0 \rightarrow a = m-2, b = -2(m+1), c = 10$ $\Delta = 4(m^2 - 1m + 11)$ $\Delta > 0 \rightarrow$ وزن طرفین از ۴ حذف شود $\frac{c}{a} > 0 \rightarrow \frac{10}{m-2} > 0 \rightarrow m > 2$ $-\frac{b}{a} = \frac{2(m+1)}{m-2} < 0$ (الف) $\frac{1}{m-2} < 0 \rightarrow m < 2 \rightarrow r_1 > r_2 \rightarrow -r_1 > r_2 \rightarrow r_1 + r_2 < 0 \rightarrow -\frac{b}{a} = \frac{2(m+1)}{m-2} < 0 \rightarrow -1 < m < 2$ (ب) $m < 2$	3
$(m-2)x^2 - 2(m+1)x + 10 = 0 \rightarrow a = m-2, b = -2(m+1), c = 10$ $\Delta = 4(m^2 - 1m + 11)$ $x_1, x_2 = \frac{c}{a} = \frac{10}{m-2} < 0 \rightarrow m < 2 \xrightarrow{\Delta > 0, a, b, c} m < 2$ (الف) $m < 2$ (ب) $x_1 + x_2 = -\frac{b}{2a} = \frac{2(m+1)}{2(m-2)} = \frac{m+1}{m-2} = -2 \rightarrow m+1 = -2m+4 \rightarrow 3m = 3 \rightarrow m = 1$	4
$\frac{2x^2}{3} - (r \sin \alpha)x + \frac{r}{3} = 0 \rightarrow a = \frac{2}{3}, b = -r \sin \alpha, c = \frac{r}{3}$ $\Delta = (r \sin \alpha)^2 - 4(\frac{2}{3})(\frac{r}{3}) \rightarrow \Delta = r^2(\sin^2 \alpha - \frac{4}{3})$ $\Delta \geq 0 \rightarrow \sin^2 \alpha - \frac{4}{3} \geq 0 \rightarrow \sin^2 \alpha \geq \frac{4}{3} \rightarrow \sin \alpha = 1 \text{ or } -1$ If $\sin \alpha = 1 \rightarrow \frac{r}{3}(1 \pm 0) \rightarrow x = \frac{r}{3}$ و $\sin \alpha = -1 \rightarrow \frac{r}{3}(-1 \pm 0) \rightarrow x = -\frac{r}{3}$ (الف) $\sin \alpha = 1 \rightarrow x = \frac{r}{3}$	5

$$y = \frac{(2x^2 - 2x - 1)(2x^2 - 2x - a)}{(x-1)(x+1)}$$

$$1 - 2x \rightarrow x \neq \pm 1 \rightarrow (1-x)/(1+x) = -(x-1)/(x+1)$$

$$\rightarrow \frac{(2x^2 - 2x - 1)(2x^2 - 2x - a)}{(x-1)(x+1)} \rightarrow x=1 \rightarrow \text{مخرج صفر} \rightarrow -(2x-a)(2x+1)$$

$$x=-1 \rightarrow \text{مخرج صفر} \rightarrow$$

$$F(x) = \frac{fac - b^2}{fa} = \frac{219}{25}$$

$$mx^2 - (m+2)x - 2 = 0 \rightarrow a = m$$

$$b = -(m+2)$$

$$c = -2$$

$$S = \frac{m+2}{m} = 1 + \frac{2}{m}, \quad P = \frac{-2}{m} = -\frac{2}{m} \xrightarrow{S = \frac{a+P}{2}} \frac{1 + \frac{2}{m}}{2} = \frac{a}{2} \left(-\frac{2}{m}\right) + \frac{1}{2} = \frac{1}{m} = \frac{1}{m+2} \cdot 2$$

$$\rightarrow S = 1 + \frac{2}{F} = \frac{F}{F}, \quad P = -\frac{2}{F} = -\frac{1}{F} \rightarrow \left(\frac{F}{F}\right)^2 - 2\left(-\frac{1}{F}\right) = \frac{9}{F} + 1 = \frac{14}{F}$$

$$2x^2 - a x + 2 = 0 \rightarrow 4 + \beta = a \rightarrow a = a - \beta$$

$$a \cdot \beta = 2 \rightarrow \beta = \frac{2}{a}$$

$$\frac{fa + \beta a}{a\beta^2} = \frac{f(a - \beta) + \beta a}{a\beta^2} = \frac{20 - f\beta + \beta a}{a\beta^2} \rightarrow \frac{\beta a - f\beta + 20}{a\beta^2} \rightarrow \beta^2 - a\beta + 2 = 0 \rightarrow \beta^2 = a\beta - 2$$

$$\beta a = \beta \cdot \beta^2 = \beta(10a\beta - 4) = 10a\beta^2 - 4\beta = 10a(a\beta - 2) - 4\beta = 10a\beta - 20a - 4\beta = 4\beta - 20a$$

$$\beta a - f\beta + 20 = (4\beta - 20a) - f\beta + 20 = 4\beta - 19a \rightarrow \frac{4\beta - 19a}{a\beta^2} = \frac{4\beta - 19a}{a\beta^2} = \frac{4\beta - 19a}{a\beta^2} = \frac{4\beta - 19a}{a\beta^2} = \frac{4\beta - 19a}{a\beta^2}$$

$$\beta^2 = a\beta - 2 \rightarrow \frac{a\beta - 2}{\beta^2} = 1 \rightarrow \frac{a\beta - 2}{\beta^2} = 1 \rightarrow \frac{a\beta - 2}{\beta^2} = 1 \rightarrow \frac{a\beta - 2}{\beta^2} = 1$$

$$y = ax^2 + bx + c \xrightarrow{\text{مشتق}} \begin{cases} fa + 2b + c = 16 \\ 9a - 4b + c = 7 \\ 19a + b + c = 0 \end{cases} \rightarrow \begin{cases} -12a - 3b = 16 \rightarrow 4a + b = -\frac{16}{3} \\ -9a - 5b = 7 \rightarrow a + b = -\frac{7}{9} \end{cases}$$

$$y_1 = 2x + 10 \rightarrow (2, 14), (-2, 6), (5, 0)$$

$$\rightarrow \text{مشتق} : -\frac{b}{fa} = x = -\frac{\frac{a}{V}}{2(1 - \frac{9}{V})} = \frac{a}{18}$$

$$2x^2 + (m+1)x + m + 2 \rightarrow x > 0, y > 0 \rightarrow y = x$$

$$2x^2 + (m+1)x + m + 2 = x \rightarrow x(m+1) - f(x)(m+2) = m^2 - 7m - 4 = 0 \rightarrow m = \frac{7 \pm \sqrt{49 + 16}}{2} = \frac{7 \pm \sqrt{65}}{2}$$

$$\Rightarrow 2x^2 + mx + x + 2 = 0 \rightarrow \Delta = 0 \rightarrow b^2 - 4ac = 0 \rightarrow m^2 - f(x)(m+2) = m^2 - 14m - 4 = 0$$

$$\rightarrow \frac{\sqrt{149} \pm 1}{2} = \frac{14 \pm 1}{2} = \begin{cases} m = -1 \\ m = 15 \end{cases}$$