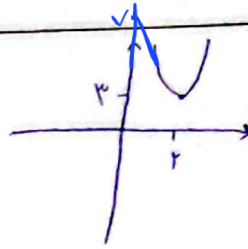
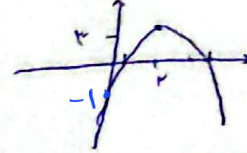


الف)  $y = x^2 - 4x + 7 \rightarrow \Delta < 0$  زیرا  
 $\frac{-b}{2a} = 2 \rightarrow y = 3$



ب)  $y = -x^2 + 4x - 1$   
 $\Delta > 0 \rightarrow x_1 = 2 + \sqrt{3}$   
 $x_2 = 2 - \sqrt{3}$   
 $x = -\frac{b}{2a} = 2 \rightarrow y = 3$



$2x^2 + (m+1)x + \frac{1}{2}m + 2 = 0 \rightarrow \Delta = (m+1)^2 - 4(2)(\frac{1}{2}m + 2) = m^2 + 2m + 1 - 4m - 8 = m^2 - 2m - 7$

الف)  $m^2 - 2m - 7 > 0 \rightarrow (-\infty, -3) \cup (5, \infty)$

ب)  $m^2 - 2m - 7 = 0 \rightarrow m = 5$   
 $m = -3$

ج)  $m^2 - 2m - 7 < 0 \rightarrow (-3, 5)$   
 $\Delta < 0$

الف)  $\Delta = 4(m+1)^2 - 4(m-2) \times 10 = 4(m^2 + 2m + 1 - 10m + 20) = 4(m^2 - 8m + 21) > 0 \rightarrow$  همیشه مثبت  
 $p > 0 \rightarrow \frac{10}{m-2} > 0 \rightarrow m > 2$   
 $s < 0 \rightarrow \frac{m+2}{m-2} < 0 \rightarrow m \in (-2, 2)$

ب)  $p < 0$   $s < 0 \rightarrow \frac{10}{m-2} < 0 \rightarrow m < 2$   
 $\frac{m+2}{m-2} < 0 \rightarrow m \in (-2, 2)$

$\Delta \cap \Delta = (-2, 2)$

الف)  $\frac{c}{a} < 0 \rightarrow \frac{10}{m-2} < 0 \rightarrow m-2 < 0 \rightarrow m < 2$   
 $\Delta > 0 \rightarrow$  همیشه مثبت  
 $\Delta < 0 \rightarrow$  همیشه منفی  
 $m < 2$   $m \neq 2$

ب)  $(m-2)x^2 - 2(m+1)x + 10 = 0 \rightarrow x = \frac{-b}{2a} = -2 \rightarrow -4(m-2) = 4(m+1)$   
 $-4m + 8 = 4m + 4 \rightarrow -4m = -4 \rightarrow m = 1$

$\frac{2x^2}{3} - (2\sin\alpha)x + \frac{4}{3} = 0 \rightarrow \Delta = (2\sin\alpha)^2 - 4(\frac{2}{3})(\frac{4}{3})$

$\Delta = 4\sin^2\alpha - \frac{32}{9} = 4(\sin^2\alpha - 1) = -4\cos^2\alpha$

$\Delta = 0$  معادله تشریحی  
 $\cos\alpha = 0 \rightarrow \sin\alpha = 1 \rightarrow \sin\alpha = \pm 1$

$\sin\alpha = 1 \rightarrow x = -\frac{b}{2a} = \frac{4}{3}$  ق ق

$\sin\alpha = -1 \rightarrow x = -\frac{4}{3}$

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

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

$$\frac{(x+1)(x+1)(x+1)(x-a)}{-(-1+x^2)} = -4x^2 + 11x + a \rightarrow x = -\frac{b}{2a} = -\frac{11}{-4} = \frac{11}{4}$$

$$y = -4\left(\frac{11}{4}\right)^2 + 11 \cdot \frac{11}{4} + a = \frac{119}{4}$$

(5)

$$mx^2 + (m+1)x - 1 = 0 \rightarrow S = \frac{m+1}{m} \quad P = -\frac{1}{m} \quad x\left(\frac{m+1}{m}\right) = a\left(-\frac{1}{m}\right) + 1$$

$$x(m+1) = -1 + 1m \rightarrow x(m+1) = -1 + 1m \rightarrow 14 = 1m \rightarrow m = 14$$

$$\alpha^2 + \beta^2 = S^2 - 2P = \left(\frac{m+1}{m}\right)^2 - 2\left(-\frac{1}{m}\right) = \frac{14}{m}$$

$$S = \frac{m}{r} \quad P = -\frac{1}{r} \quad (5)$$

$$\beta^2 = a\beta - 1 \rightarrow \beta^2 = \beta \cdot \beta = \beta(a\beta - 1) = a\beta^2 - \beta \quad \beta^2 = a(a\beta - 1) - \beta$$

$$x^2 - 10 - 1\beta = 1\beta - 10 \quad \beta^2 = \beta \cdot \beta = \beta(1\beta - 10) = 1\beta^2 - 10\beta$$

$$\beta = \beta \cdot \beta = \beta(10 - 1\beta) = 10\beta - 1\beta^2 = 10\beta - (10\beta - 1) = 1$$

$$a^2 - 10 - 1\beta = 1\beta - 10 \quad 1\beta - 10 - 1\beta = 1\beta - 10$$

$$\frac{1 + \beta^2}{a\beta^2} = \frac{1 + (10 - 1\beta)}{a\beta^2} = \frac{10 - 1\beta}{a\beta^2} = \frac{10 - 1\beta}{1\beta - 10} = 19$$

$$x = 1 \rightarrow a(1)^2 + b(1) + c = 1(1) + 10 \rightarrow a + b + c = 11 \quad c = 11$$

$$x = -1 \rightarrow a(-1)^2 + b(-1) + c = 1(-1) + 10 \rightarrow a - b + c = 9$$

$$y = 0 \rightarrow x = 1 \rightarrow a(1)^2 + b(1) + c = 0 \rightarrow 14a + 11b + c = 0$$

$$\begin{cases} a + b + c = 11 \\ 9a - b + c = 9 \\ 14a + 11b + c = 0 \end{cases} \rightarrow b = a + 1$$

$$y = -\frac{9}{11}x^2 + \frac{10}{11}x + \frac{11}{11} \quad x = -\frac{b}{2a} = -\frac{\frac{10}{11}}{2 \cdot \left(-\frac{9}{11}\right)} = \frac{5}{9}$$

$$y = x$$

$$x^2 + (m+1)x + m + 4 = x \rightarrow x^2 + mx + m + 4 = 0$$

$$m^2 - 4(1)(m+4) = m^2 - 4m - 16 = 0 \quad \begin{cases} m = 12 \rightarrow x^2 + 13x + 16 = 0 \rightarrow x^2 + 4x + 9 = 0 \\ m = -4 \rightarrow x^2 - 3x - 4 = 0 \end{cases}$$

$$x^2 - 4x - 4 = x^2 - 2x + 1 \rightarrow x = 1 \rightarrow y = 1$$

$$\sqrt{00} \quad \sqrt{0000}$$

(5)