

الف) $x^2 - 6x + 8 = 0 \rightarrow x^2 - 6x + 9 - 1 = 0 \rightarrow (x-3)^2 = 1 \rightarrow x-3 = \pm 1$
 $\begin{matrix} \frac{1}{2} = 4 \\ \frac{1}{2} = 4 \end{matrix}$
 $\begin{matrix} x=2 \\ x=4 \end{matrix}$

ب) $x^2 + 8x + 7 = 0 \rightarrow x^2 + 8x = -7 \xrightarrow{+16} x^2 + 8x + 16 = -7 + 16$
 $\rightarrow (x+4)^2 = 9 \rightarrow x+4 = \pm 3 \rightarrow \begin{matrix} x = -1 \\ x = -7 \end{matrix}$

الف) $x^2 - 5x + 6 = 0 \rightarrow (x-3)(x-2) = 0 \rightarrow \begin{matrix} x=3 \\ x=2 \end{matrix}$

ب) $x^2 - 5x - 14 = 0 \rightarrow (x-7)(x+2) = 0 \rightarrow \begin{matrix} x=7 \\ x=-2 \end{matrix}$

الف) $x^2 - 3x - 5 = 0 \rightarrow x = \frac{3 \pm \sqrt{9+20}}{2}$

★ اعداد زیر رادیکال در هر دو معادله مقدار دقیقی ندارند.

ب) $2x^2 - 4x + \frac{1}{2} = 0 \rightarrow x = \frac{4 \pm \sqrt{16-2}}{4}$

الف) $x^2 - 3x + 2 = 0 \rightarrow (x-1)(x-2) = 0 \rightarrow \begin{matrix} x=1 \\ x=2 \end{matrix}$

ب) $4x^2 + x - 3 = 0 \rightarrow x = \frac{-1 \pm \sqrt{1+48}}{8} \rightarrow \frac{-1 \pm 7}{8} \rightarrow \begin{matrix} x=-1 \\ x=\frac{3}{4} \end{matrix}$

الف) $5x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 35 = 0 \rightarrow (x-5)(x-7) = 0$
 $\begin{matrix} x=5 \div 5 \rightarrow 1 \\ x=7 \div 5 \rightarrow \frac{7}{5} \end{matrix}$

ب) $3x^2 - 10x + 7 = 0 \rightarrow x^2 - 10x + 21 = 0$
 $\rightarrow (x-3)(x-7) = 0 \rightarrow \begin{matrix} x=3 \div 3 \rightarrow 1 \\ x=7 \div 3 \rightarrow \frac{7}{3} \end{matrix}$

$$\text{الف)} -3x^2 + 5x - 1 = 0 \rightarrow x = \frac{-5 \pm \sqrt{25 - 12}}{-6} \rightarrow \boxed{\text{۲ ریشه}}$$

$$\text{ب)} 2x^2 - x + 2 = 0 \rightarrow x = \frac{1 \pm \sqrt{1 - 16}}{4} \rightarrow \boxed{\text{ریشه حقیقی ندارد}} \rightarrow \text{زیرادیکال بافرجه زوج نباید منفی باشد.}$$

$$\text{ج)} 2x^2 - 4x + 2 = 0 \rightarrow x = \frac{4 \pm \sqrt{16 - 16}}{4} = 1 \rightarrow \boxed{\text{ریشه حقیقی مضاعف}}$$

$$\text{د)} 2x^2 - x + 1 = 0 \rightarrow x = \frac{1 \pm \sqrt{1 - 8}}{4} \rightarrow \boxed{\text{ریشه حقیقی ندارد}}$$

$$2x^2 - 3x + a = 0 \rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow \Delta = b^2 - 4ac \rightarrow 9 - 4a$$

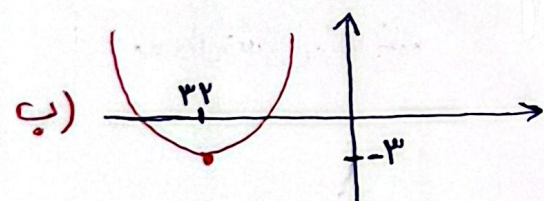
$$\text{الف)} \Delta > 0 \rightarrow 9 - 4a > 0 \rightarrow a < \frac{9}{4}$$

$$\text{ب)} \Delta = 0 \rightarrow 9 - 4a = 0 \rightarrow a = \frac{9}{4} \quad \text{د)} \Delta \geq 0 \rightarrow 9 - 4a \geq 0 \rightarrow a \leq \frac{9}{4}$$

$$\text{ج)} \Delta < 0 \rightarrow 9 - 4a < 0 \rightarrow a > \frac{9}{4}$$

$$y = x^2 + 6x + 5$$

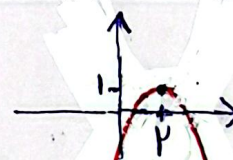
$$\text{الف)} \min \text{ (مینیم دار)} \rightarrow ex \left| -\frac{b}{2a} \right| \rightarrow -\frac{6}{2} = -3 \rightarrow x = -3 \rightarrow y = 32 \rightarrow \min = \begin{vmatrix} -3 \\ 32 \end{vmatrix}$$



$$y = -x^2 + 4x - 3$$

$$\text{الف)} ex \left| -\frac{b}{2a} \right| \rightarrow -\frac{4}{-2} = 2 \rightarrow x = 2 \rightarrow y = 1 \rightarrow \max = \begin{vmatrix} 2 \\ 1 \end{vmatrix}$$

ماکسیم دار
→ max =



$$\text{ب)} y = -x^2 + 4x - 3 \xrightarrow{y=0} -x^2 + 4x - 3 = 0 \rightarrow x = \frac{-4 \pm \sqrt{16 - 12}}{-2} \rightarrow x = 3 \text{ or } x = 1$$

$$x^2 - 3x - 2 = 0 \rightarrow \text{جمع ریشه ها} = S = -\frac{b}{a} = 3, \text{ ضرب ریشه ها} = P = \frac{c}{a} = -2$$

$$\text{الف)} S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = 13$$

$$\text{ب)} S^3 - 3SP = 3^3 - 3(3)(-2) = 27 + 18 = 45$$