

دو ریشه حقیقی متساویه $\rightarrow (x+1)(x+1) = 0 \rightarrow x^2 + 2x + 1 = 0$ الف

۵ ریشه دارد $\rightarrow$ چون $\Delta > 0 \rightarrow \frac{1 \pm \sqrt{-10}}{2}$ ب

یک ریشه مضاعف $\rightarrow \Delta = 0 \rightarrow x = -\frac{c}{a} = -\frac{1}{2}$ ج

۵ ریشه دارد $\rightarrow$ چون $\Delta > 0 \rightarrow \frac{1 \pm \sqrt{-7}}{2}$ د

الف) $\Delta > 0 \Rightarrow 9 - 4a > 0 \Rightarrow 9 > 4a \Rightarrow a < \frac{9}{4}$ $2x^2 - 3x + a = 0$

ب) $\Delta = 0 \Rightarrow 9 - 4a = 0 \Rightarrow 4a = 9 \Rightarrow a = \frac{9}{4} \Rightarrow \Delta = 9 - 4a$

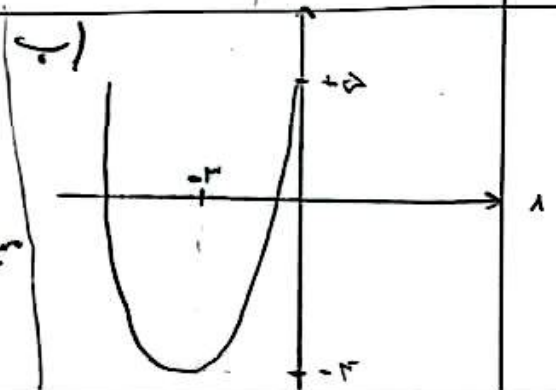
ج) $\Delta < 0 \Rightarrow 9 - 4a < 0 \Rightarrow 9 < 4a \Rightarrow a > \frac{9}{4}$

د) $\Delta \geq 0 \Rightarrow 9 - 4a \geq 0 \Rightarrow \frac{9}{4} \geq a$

الف) $\text{Min} \left| \begin{array}{c} -\frac{b}{2a} \\ -\frac{\Delta}{4a} \end{array} \right| \Rightarrow \left| \begin{array}{c} -\frac{3}{4} \\ -\frac{1}{4} \end{array} \right|$

$-\frac{b}{2a} = -\frac{3}{4} = \frac{3}{4}$

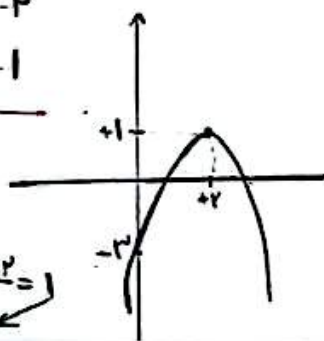
$-\frac{\Delta}{4a} = -\frac{b^2 - 4ac}{4a} = \frac{-9 + 12}{4} = \frac{3}{4} \Rightarrow$ مینیمم دارد $a > 0$



الف) $\text{Max} \left| \begin{array}{c} -\frac{b}{2a} \\ -\frac{\Delta}{4a} \end{array} \right| \Rightarrow \left| \begin{array}{c} -\frac{1}{2} \\ -\frac{1}{4} \end{array} \right|$

$-\frac{b}{2a} = -\frac{1}{2} = \frac{1}{2}$

$-\frac{\Delta}{4a} = -\frac{b^2 - 4ac}{4a} = \frac{-1 + 2}{4} = \frac{1}{4}$



ب) $y = -x^2 + 3x - 2$
 $\Rightarrow \frac{-3 \pm \sqrt{9}}{-2} \rightarrow \frac{-3-3}{-2} = +3$
 $\rightarrow \frac{-3+3}{-2} = +1$

$\Rightarrow x = 1 \Rightarrow \begin{array}{c} 1 \\ 0 \end{array}$
 $x = 2 \Rightarrow \begin{array}{c} 1 \\ 0 \end{array}$

$x^2 - 3x - 2 = 0 \Rightarrow \frac{3 \pm \sqrt{17}}{2} \Rightarrow x_1 = \frac{3 + \sqrt{17}}{2}, x_2 = \frac{3 - \sqrt{17}}{2}$

$\frac{3 + \sqrt{17}}{2} + \frac{3 - \sqrt{17}}{2} = \frac{6}{2} = 3 \Rightarrow S = 3$ / $\frac{3 + \sqrt{17}}{2} \times \frac{3 - \sqrt{17}}{2} = -\frac{5}{2} = -2.5 = P$

الف) $3^2 - 2(-2) = 13$

ب) $3^2 - (2 - 2(-2)) = 27 + 18 = 45$

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

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

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

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

الف) $x^2 - 12x - 9 = 0 \Rightarrow \frac{12 \pm \sqrt{144 + 36}}{2} \Rightarrow \begin{cases} x = \frac{12 + \sqrt{180}}{2} \\ x = \frac{12 - \sqrt{180}}{2} \end{cases}$

ب) $4x^2 - 4x + 1 = 0 \Rightarrow \frac{4 \pm \sqrt{16 - 16}}{8} \Rightarrow \begin{cases} x = \frac{4 + \sqrt{0}}{8} = \frac{1}{2} \\ x = \frac{4 - \sqrt{0}}{8} = \frac{1}{2} \end{cases}$

الف) $x^2 - 3x + 2 = 0 \Rightarrow \begin{matrix} a+b+c=0 \\ 1+(-r)+2=0 \end{matrix} \Rightarrow \begin{cases} x=1 \\ x=\frac{c}{a} = \frac{2}{1} = 2 \end{cases}$

ب) $x^2 + x - 2 = 0 \Rightarrow \begin{matrix} a+c=b \\ 1+(-r)=1 \end{matrix} \Rightarrow \begin{cases} x=-1 \\ x=-\frac{c}{a} = -\frac{2}{1} = -2 \end{cases}$

الف) $5x^2 - 12x + 7 = 0 \Rightarrow x^2 - 12x + 35 = 0 \Rightarrow (x-7)(x-5) = 0$
 $\Rightarrow \begin{cases} x=7 \\ x=5 \end{cases}$

ب) $3x^2 - 10x + 7 = 0 \Rightarrow x^2 - 10x + 21 = 0 \Rightarrow (x-7)(x-3) = 0$
 $\Rightarrow \begin{cases} x=7 \\ x=3 \end{cases}$