

الف) $x^2 - 4x + 8 = 0 \xrightarrow{+1} x^2 - 4x + 9 = 1 \Rightarrow (x-2)^2 = 1 \rightarrow x-2 = \pm 1$
 $x = 3 / x = 1$

ب) $x^2 + 8x + 7 = 0 \xrightarrow{+9} x^2 + 8x + 17 = 9 \rightarrow (x+4)^2 = 9 \rightarrow x+4 = \pm 3$
 $x = -7 / x = -1$

الف) $x^2 - 5x + 4 = 0 \rightarrow (x-1)(x-4) = 0$
 $x-1 = 0 \rightarrow x = 1$
 $x-4 = 0 \rightarrow x = 4$
 ب) $x^2 - 5x - 14 = 0 \rightarrow (x+2)(x-7) = 0$
 $x+2 = 0 \rightarrow x = -2$
 $x-7 = 0 \rightarrow x = 7$

الف) $x^2 - 3x - 5 = 0 \rightarrow \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow x = \frac{-(-3) \pm \sqrt{49}}{2} \Rightarrow$

$\frac{3 + \sqrt{49}}{2}$
 $\frac{3 - \sqrt{49}}{2}$

ب) $2x^2 - 5x + \frac{1}{2} = 0 \rightarrow \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{5 \pm \sqrt{17}}{4} \Rightarrow$

$\frac{5 + \sqrt{17}}{4}$
 $\frac{5 - \sqrt{17}}{4}$

الف) $x^2 - 3x - 5 = 0 \rightarrow \cancel{2x^2 - 6x - 10 = 0} (x-1)(x-4) = 0$
 $x = 1$
 $x = 4$

ب) $5x^2 + x - 3 = 0 \rightarrow \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow x = \frac{-1 \pm \sqrt{49}}{10}$
 $\frac{-1+7}{10} = \frac{6}{10} = \frac{3}{5}$
 $\frac{-1-7}{10} = \frac{-8}{10} = -\frac{4}{5}$

الف) $5x^2 - 14x + 7 = 0 \xrightarrow{a \times c} x^2 - 14x + 35 = 0 \rightarrow (x-5)(x-7) = 0$
 $x = 5 / x = 7$

ب) $3x^2 - 10x + 7 = 0 \xrightarrow{a \times c} x^2 - 10x + 21 = 0 \rightarrow (x-3)(x-7) = 0$
 $x = 3 / x = 7$

الف) $x^2 - 2x - 1 = 0 \Rightarrow \Delta = 4 - 4(-1) = 8 > 0 \Rightarrow$ حقیقی و متمایز

ب) $x^2 - 2x + 2 = 0 \Rightarrow \Delta = (-2)^2 - 4(1)(2) = 4 - 8 = -4 < 0 \Rightarrow$ مشتق حقیقی ندارد

ج) $x^2 - 4x + 4 = 0 \Rightarrow \Delta = (-4)^2 - 4(1)(4) = 16 - 16 = 0 \Rightarrow$ یک مشتق

د) $x^2 - x + 1 = 0 \Rightarrow \Delta = (-1)^2 - 4(1)(1) = 1 - 4 = -3 < 0 \Rightarrow$ مشتق حقیقی ندارد

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

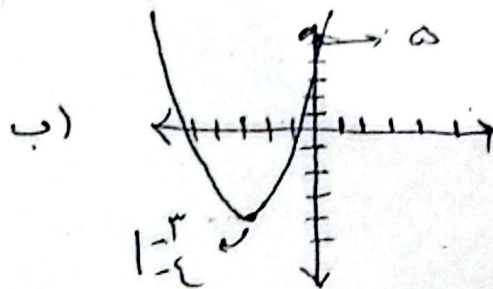
ب) $\Delta = 0 \Rightarrow \Delta = 9 - 4a = 0 \Rightarrow a = \frac{9}{4}$

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

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

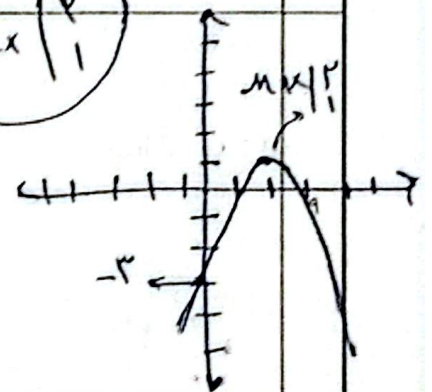
الف) $x = \frac{-b}{2a} \Rightarrow \frac{-4}{2(1)} = -2 / y = (-2)^2 + 4(-2) + 5 = 5 - 8 = -3$

Min $\left| \begin{matrix} -3 \\ -4 \end{matrix} \right|$



الف) $x = \frac{-b}{2a} \Rightarrow \frac{-4}{2(-1)} = 2 / y = (2)^2 + 4(2) + 1 = 4 + 8 + 1 = 13$

Max $\left| \begin{matrix} 13 \\ 1 \end{matrix} \right|$



ب) $-x^2 + 4x - 3 = 0 \Rightarrow -x^2 + 4x - 3 = 0 \Rightarrow x = 1$

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

$S = \frac{-b}{a} = \frac{4}{-1} = -4$

1) $S^2 - 2P \Rightarrow 16 - 2(4) = 8$

2) $S^2 - 3PS \Rightarrow 16 - 3(4)(-4) = 64$