

الف) $x^2 - 6x + 1 = 0 \xrightarrow{+1} x^2 - 6x + 9 = 1 \rightarrow x - 3 = \pm 1 \rightarrow x = +4$
 $\rightarrow x = +2$

ب) $x^2 - 11x + 10 = 0 \xrightarrow{+9} x^2 - 11x + 49 = 9 \rightarrow x + 7 = \pm 2 \rightarrow x = -5$
 $\rightarrow x = -1$

الف) $x^2 - 5x + 6 = 0 \rightarrow (x - 3)(x - 2) = 0 \rightarrow x = +3$
 $\rightarrow x = +2$

ب) $x^2 - 5x + 14 = 0$ یکی از ریشه ها $\rightarrow$ ضرب متنی منفی است
 $\rightarrow (x - 7)(x + 2) = 0 \rightarrow x = -2$
 $\rightarrow x = +7$

الف) $x^2 - 3x + 2 = 0 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a}$
 $\rightarrow x = \frac{-(-3) \pm \sqrt{9-4}}{2} \Rightarrow x = \frac{3 \pm \sqrt{5}}{2}$

ب) $4x^2 - 4x + 1 = 0 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a}$
 $\rightarrow x = \frac{-(-4) \pm \sqrt{16-4}}{8} \rightarrow x = \frac{4 \pm \sqrt{12}}{8}$

الف) $x^2 - 3x + 2 = 0 \rightarrow a + b + c = 0 \rightarrow x = 1$
 $\rightarrow x = \frac{c}{a} = 2$

ب) $5x^2 + x - 3 = 0 \rightarrow a + c = b \rightarrow x = -1$
 $\rightarrow x = \frac{-c}{a} = \frac{3}{5}$

الف) $5x^2 - 14x + 8 = 0$
 $\xrightarrow{a \times c} x^2 - 14x + 16 = 0 \rightarrow (x - 2)(x - 8) = 0 \rightarrow x = 2$
 $\rightarrow x = 8$

ب) $10x^2 - 11x + 3 = 0$
 $\xrightarrow{a \times c} x^2 - 11x + 30 = 0 \rightarrow (x - 5)(x - 6) = 0 \rightarrow x = 5$
 $\rightarrow x = 6$

مستقیم

(ب) $2a^2 - a + 2 = 0$ منفی به بدو
 $\Delta = b^2 - 4ac = 1 - 4 \times 2 \times 2 = -15$

(الف) $-3a^2 + 5a - 1 = 0$
 $\Delta = b^2 - 4ac = 25 - 4 \times (-3) \times (-1) = 25 - 12 = 13$

$2a^2 - a + 1 = 0$

(ج) صحیح

$2a^2 - 4a + 2 = 0$

(د)

$\Delta = b^2 - 4ac = 1 - 4 = -3$ منفی به بدو

$\Delta = b^2 - 4ac = 16 - 16 = 0$ مثبت به دو، ریشه متساوی

$2a^2 - 3a + a = 0 \rightarrow \Delta = b^2 - 4ac = 9 - 4a$

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

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

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

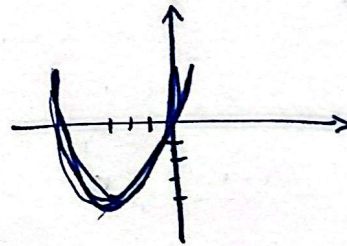
د $\rightarrow \Delta \rightarrow$ غیر منفی $9 - 4a \geq 0 \rightarrow a \leq \frac{9}{4}$

$y = a^2 + 6a + 4 \rightarrow \min$ (الف)

(ب)

$\left| \frac{-b}{2a} = \frac{-6}{2} = -3 \right|$

$(-3)^2 + 6(-3) + 4 = 9 - 18 + 4 = -5$



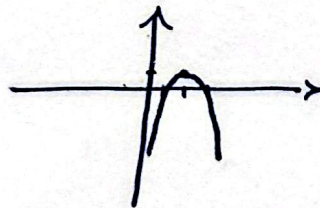
$y = -a^2 + 4a - 3 \rightarrow \max$ (الف)

(ب) $-a^2 + 4a - 3 = 0$

$\rightarrow a + b + c = 0$

$\rightarrow a \leq 1$
 $\rightarrow a \leq \frac{c}{a} = 3$

$\left| \frac{-b}{2a} = \frac{-4}{-2} = 2 \right|$
 $-4 + 8 - 3 = 1$



$a^2 - 3a - 2 = 0$

$a^2 - 5a + 6 = 0 \rightarrow S = 5, P = 6$

$S^2 - 2P = 25 - 2(-2) = 13$ (الف)

$S^2 - 3SP = 25 - 3(-12) = 61$ (ب)