

الف) $x^2 - 4x + 4 = 0 \Rightarrow x^2 - 4x + 4 = 1 = (x-2)^2 = 1 \Rightarrow x-2 = 1 \Rightarrow x = 3$ ✓
 ب) $x^2 + 8x + 16 = 0 \Rightarrow x^2 + 8x + 16 = 9 \Rightarrow (x+4)^2 = 9 \Rightarrow x+4 = 3 \Rightarrow x = -1$ ✓
 مینویس توان باز
 م پشت ۳

الف) $x^2 - 5x + 6 = 0 \Rightarrow (x-2)(x-3) \Rightarrow x = 2, 3$ ✓
 $a+b=-5 \Rightarrow a=-2$
 $a \times b = 6 \Rightarrow b = -3$
 ب) $x^2 - 5x - 14 = 0 \Rightarrow (x-7)(x+2) \Rightarrow x = 7, -2$ ✓
 $a+b=5 \Rightarrow a=7$
 $a \times b = -14 \Rightarrow b = -2$

الف) $x^2 - 3x - 5 = 0 \Rightarrow \frac{-(-3) \pm \sqrt{9 - 4(-15)}}{2} \Rightarrow x = \frac{3 + \sqrt{29}}{2}, \frac{3 - \sqrt{29}}{2}$ ✓
 ب) $2x^2 - 4x + \frac{1}{2} = 0 \Rightarrow \frac{-(-4) \pm \sqrt{16 - 4(2)(\frac{1}{2})}}{2 \times 2} \Rightarrow x = 1 + \frac{\sqrt{4}}{2}, 1 - \frac{\sqrt{4}}{2}$ ✓
 $\Delta = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

الف) $x^2 - 3x + 2 = 0 \Rightarrow a+b+c=0 \Rightarrow x=1, \frac{c}{a} \Rightarrow x = 1, 2$ ✓
 $1 + (-3) + 2 = 0$
 ب) $4x^2 + x - 3 = 0 \Rightarrow a+c=b \Rightarrow x=-1, -\frac{c}{a} \Rightarrow x = -1, \frac{3}{4}$ ✓
 $4 + (-3) = 1$

الف) $5x^2 - 12x + 7 = 0 \Rightarrow x^2 - 12x + 35 = 0 \Rightarrow (x-5)(x-7) \Rightarrow x = 5, 7$ ✓
 ب) $3x^2 - 10x + 7 = 0 \Rightarrow x^2 - 10x + 21 = 0 \Rightarrow (x-7)(x-3) \Rightarrow x = 7, 3$ ✓

$$2a^2 - 4a - 1 = 0$$

$$\Delta = 16 - 4(-4)(-1) = 16 - 16 = 0 \Rightarrow \Delta = 0 \Rightarrow \Delta > 0 \Rightarrow \text{دو ریشه حقیقی}$$

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

$$\Delta = (-4)^2 - 4(2)(2) = 16 - 16 = 0 \Rightarrow \Delta = 0 \Rightarrow \Delta < 0 \Rightarrow \text{دو ریشه حقیقی دایره}$$

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

$$\Delta = (-4)^2 - 4(2)(2) = 16 - 16 = 0 \Rightarrow \Delta = 0 \Rightarrow \Delta = 0 \Rightarrow \text{یک ریشه حقیقی}$$

$$2a^2 - 4a + 1 = 0 \Rightarrow \Delta = 16 - 8 = 8 > 0 \Rightarrow \Delta > 0 \Rightarrow \text{دو ریشه حقیقی}$$

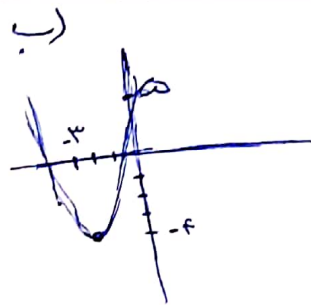
$$4 - 8a > 0 \Rightarrow a < \frac{1}{2}$$

$$4 - 8a = 0 \Rightarrow a = \frac{1}{2}$$

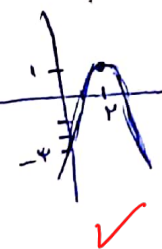
$$4 - 8a < 0 \Rightarrow a > \frac{1}{2}$$

$$4 - 8a \geq 0 \Rightarrow a \leq \frac{1}{2}$$

$$\text{الف) } \begin{cases} \frac{-b}{2a} = -3 \\ \frac{-\Delta}{4a} = -4 \end{cases} \Rightarrow \text{Min} \begin{cases} -3 \\ -4 \end{cases}$$



$$\text{الف) } \begin{cases} \frac{-b}{2a} = 2 \\ \frac{-\Delta}{4a} = 1 \end{cases} \Rightarrow \text{Max} \begin{cases} 2 \\ 1 \end{cases}$$



$$\text{ب) } y = 0$$

$$-a^2 + 4a - 3 = 0$$

$$-(a^2 - 4a + 3) = 0$$

$$-(a-1)(a-3) = 0$$

$$\Rightarrow a = 1, 3$$

در نقاط 1 و 3

$$S = \frac{b}{a}$$

$$P = \frac{c}{a}$$

$$\Rightarrow S = 3$$

$$P = -2$$

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

$$\text{ب) } S^3 - 3(S)(-P) = 27 + 12 = 39$$