

$$(الف): x^2 - 6x + 8 = 0 \Rightarrow x^2 - 6x + 9 = 1 \Rightarrow (x-3)^2 = 1 \Rightarrow x-3 = \pm 1$$

$$\Rightarrow \begin{cases} x=2 \\ x=4 \end{cases}$$

$$ب): x^2 + 14x + 49 = 0 \Rightarrow x^2 + 14x + 49 = 0 \Rightarrow (x+7)^2 = 0 \Rightarrow x+7 = \pm 0$$

$$\Rightarrow \begin{cases} x=-7 \\ x=-7 \end{cases}$$

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

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

$$(الف): x^2 - 3x - 4 = 0 \quad \Delta = b^2 - 4ac = 9 + 16 = 25 \Rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow$$

$$\Rightarrow x = \frac{3 \pm \sqrt{25}}{2}$$

$$ب): 2x^2 - 5x + \frac{1}{2} = 0 \quad \Delta = b^2 - 4ac = 25 - 2 = 23 \Rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow$$

$$\Rightarrow x = \frac{5 \pm \sqrt{23}}{4}$$

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

$$ب): 4x^2 + x - 3 = 0 \quad \Delta = 1 + 48 = 49 \Rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow$$

$$\Rightarrow x = \frac{-1 \pm \sqrt{49}}{8} \Rightarrow \begin{cases} x = \frac{3}{4} \\ x = -1 \end{cases}$$

$$(الف): 4x^2 - 12x + 9 = 0 \Rightarrow x^2 - 3x + \frac{9}{4} = 0 \Rightarrow (x-\frac{3}{2})(x-\frac{3}{2}) = 0 \Rightarrow x = \frac{3}{2}$$

$$ب): 3x^2 - 10x + 7 = 0 \Rightarrow x^2 - \frac{10}{3}x + \frac{7}{3} = 0 \Rightarrow (x-\frac{7}{3})(x-1) = 0 \Rightarrow x = \frac{7}{3}, x=1$$

$$\Delta = b^2 - 4ac$$

الف) $\Delta = b^2 - 4ac = 25 - 12 = 13 \Rightarrow \Delta > 0$ ب) $\Delta = 1 - 16 = -15 \Rightarrow \Delta < 0$
دو ریشه صفر ریشه

ج) $\Delta = 16 - 16 = 0 \Rightarrow \Delta = 0$ د) $\Delta = 1 - 8 = -7 \Rightarrow \Delta < 0$
یک ریشه مضاعف صفر ریشه

$$\Delta = b^2 - 4ac = 9 - 12a$$

الف) $\Delta > 0 \Rightarrow 9 - 12a > 0 \Rightarrow a < \frac{3}{4}$ بزرگتر از صفر پس:

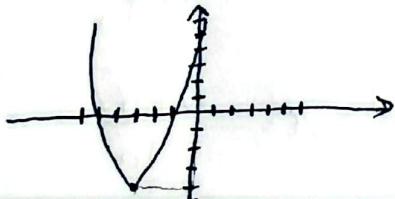
ب) $\Delta = 0 \Rightarrow 9 - 12a = 0 \Rightarrow a = \frac{3}{4}$ پس:

ج) $\Delta < 0 \Rightarrow 9 - 12a < 0 \Rightarrow a > \frac{3}{4}$ پس:

د) $\Delta \geq 0 \Rightarrow 9 - 12a \geq 0 \Rightarrow a \leq \frac{3}{4}$ پس:

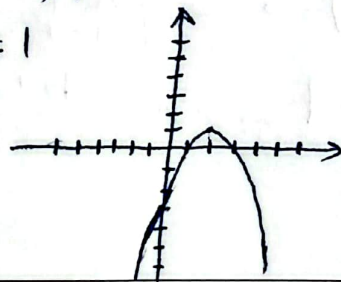
$$x = -\frac{b}{2a} = -\frac{4}{2} = -2$$

الف) رأس منبسط منحصرات رأس: $\left| -\frac{3}{4} \right|$
 $y = (-2)^2 + 4(-2) + 9 = 9 - 8 + 9 = 1$



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

الف) رأس ماکسیمم منحصرات رأس: $\left| 1 \right|$
 $y = -2^2 + 4 - 2 = 1$



$$S = -\frac{b}{a} = -\frac{4}{1} = -4 \quad P = \frac{c}{a} = \frac{9}{1} = 9$$

الف) $S^2 - 2P = 16 - 18 = -2$

ب) $S^3 - 3SP = -64 - 36 = -100$