

الف) $(x-3)^2: x^2-6x+9 = (x^2-6x+8) + 1 = 1 \Rightarrow \frac{x^2-6x+9}{(x-3)^2} = 1 \Rightarrow x-3 = \pm 1$
 $\Rightarrow \boxed{x = 4 \text{ یا } 2}$

ب) $(x+4)^2: x^2+8x+16 = (x^2+8x+7) + 9 \Rightarrow \frac{x^2+8x+16}{(x+4)^2} = 9 \Rightarrow x+4 = \pm 3$
 $\Rightarrow \boxed{x = -1 \text{ یا } -7}$

الف) $x^2-5x+4 = (x-2)(x-3) = 0 \Rightarrow \begin{cases} x-2=0 \\ x-3=0 \end{cases} \rightarrow \boxed{x = 2 \text{ یا } 3}$

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

الف) $\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{3 \pm \sqrt{9+20}}{2} = \frac{3 \pm \sqrt{29}}{2} \rightarrow \boxed{x = \frac{3+\sqrt{29}}{2} \text{ یا } \frac{3-\sqrt{29}}{2}}$

ب) $\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{4 \pm \sqrt{14-9}}{2} = \frac{4 \pm \sqrt{5}}{2} \rightarrow \boxed{x = 2 + \frac{\sqrt{5}}{2} \text{ یا } 2 - \frac{\sqrt{5}}{2}}$

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

ب) $4x^2+x-3 = 0 = (4x-3)(x+1) = 0 \Rightarrow \begin{cases} 4x-3=0 \\ x+1=0 \end{cases} \rightarrow \boxed{x = -1 \text{ یا } \frac{3}{4}}$

الف) $2x^2-13x+5 = 0 \Rightarrow x^2-13x+25 = (x-5)(x-8) = 0 \Rightarrow x = 5 \text{ یا } 8$
 $\Rightarrow \boxed{x = \frac{5}{0} \text{ یا } 1}$

ب) $3x^2-10x+5 = x^2-10x+21 = (x-5)(x-7) = 0 \Rightarrow x = 5 \text{ یا } 7$
 $\Rightarrow \boxed{x = \frac{5}{3} \text{ یا } 1}$

الف) $\Delta = b^2 - 4ac = 10 - 4(1 \times 3) = 10 - 12 = -2 < 0$

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ب) $\Delta = b^2 - 4ac = 1 - 4(1 \times 2) = 1 - 8 = -7 < 0$

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ج) $\Delta = b^2 - 4ac = 16 - 4(1 \times 4) = 16 - 16 = 0$

حاصل واحد

د) $\Delta = b^2 - 4ac = 1 - 4(1 \times 1) = 1 - 4 = -3 < 0$

لا يوجد حقيقي

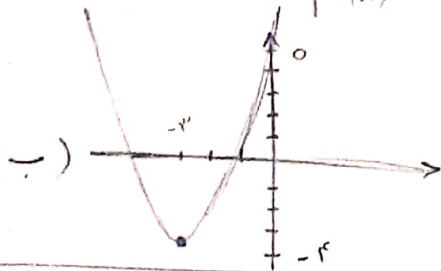
الف) $\Delta = b^2 - 4ac > 0 \rightarrow 9 - 4a > 0 \rightarrow 9 > 4a \rightarrow \frac{9}{4} > a$

ب) $\Delta = b^2 - 4ac = 0 \rightarrow 9 - 4a = 0 \rightarrow 9 = 4a \rightarrow a = \frac{9}{4}$

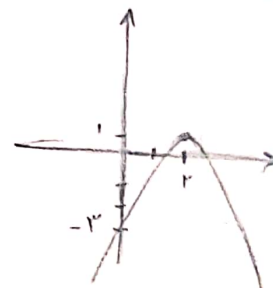
ج) $\Delta = b^2 - 4ac < 0 \rightarrow 9 - 4a < 0 \rightarrow 9 < 4a \rightarrow \frac{9}{4} < a$

د) $\Delta = b^2 - 4ac \geq 0 \rightarrow 9 - 4a \geq 0 \rightarrow 9 \geq 4a \rightarrow \frac{9}{4} \geq a$

الف) ext min $\rightarrow \left| \frac{-b}{2a} = \frac{-9}{2} = -4.5 \right|$



الف) ext max $\rightarrow \left| \frac{-b}{2a} = \frac{-9}{2} = -4.5 \right|$



ب) $\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-9 \pm \sqrt{81}}{2} = \frac{-9 \pm 9}{2} = \frac{-9+9}{2} = 0, \frac{-9-9}{2} = -9$

$S \quad 3 = \frac{3}{1} = \frac{-b}{a} : S$

$P \quad -9 = \frac{-9}{1} = \frac{c}{a} : P$

الف) $9 - 4(-9) = 9 + 36 = 45$

ب) $27 - 4(3 \times -9) = 27 + 108 = 135$