

الف) $(x-3)^2: x^2-6x+9 = (x^2-6x+8) + 1 = 1 \Rightarrow x^2-6x+9 = 1 \Rightarrow x^2-6x+8 = 0 \Rightarrow x = 2 \vee 4$

ب) $(x+4)^2: x^2+8x+16 = (x^2+8x+7) + 9 \Rightarrow x^2+8x+16 = 9 \Rightarrow x^2+8x+7 = 0 \Rightarrow x = -1 \vee -7$

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

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

الف) $\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{3 \pm \sqrt{9+20}}{2} = \frac{3 \pm \sqrt{29}}{2} \Rightarrow x = \frac{3+\sqrt{29}}{2} \vee \frac{3-\sqrt{29}}{2}$

ب) $\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{4 \pm \sqrt{14-9}}{2} = \frac{4 \pm \sqrt{5}}{2} \Rightarrow x = 2 + \frac{\sqrt{5}}{2} \vee 2 - \frac{\sqrt{5}}{2}$

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

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

الف) $2x^2-13x+5 = 0 \Rightarrow x^2-13x+25 = (x-5)(x-8) = 0 \Rightarrow x = 5 \vee 8$

ب) $3x^2-10x+5 = x^2-10x+21 = (x-5)(x-7) = 0 \Rightarrow x = 5 \vee 7$

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

لا يوجد حقيقي

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

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

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

لا يوجد حقيقي

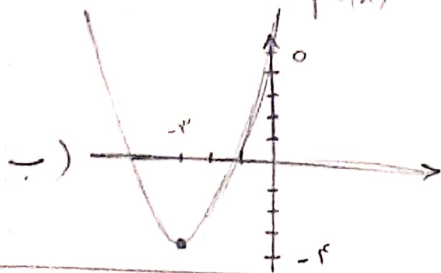
الف) $\Delta = b^2 - 4ac > 0 \rightarrow 9 - 4a > 0 \rightarrow 9 > 4a \rightarrow \frac{9}{4} > a$ ✓

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

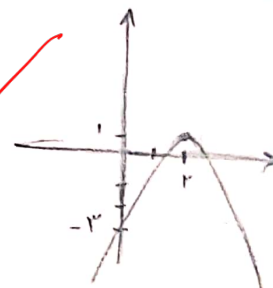
ج) $\Delta = b^2 - 4ac < 0 \rightarrow 9 - 4a < 0 \rightarrow 9 < 4a \rightarrow \frac{9}{4} < a$ ✓

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 $\rightarrow \left| \begin{array}{c} -\frac{b}{2a} \\ f(x) \end{array} \right| = \left| \begin{array}{c} -\frac{4}{2} \\ f(1) \end{array} \right| = \left| \begin{array}{c} -2 \\ -3 \end{array} \right|$ ✓



الف) ext max $\rightarrow \left| \begin{array}{c} -\frac{b}{2a} \\ f(x) \end{array} \right| = \left| \begin{array}{c} -\frac{4}{2} \\ f(1) \end{array} \right| = \left| \begin{array}{c} -2 \\ 1 \end{array} \right|$ ✓



ب) $\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-4 \pm \sqrt{4}}{-2} = \frac{-4 \pm 2}{-2} = \frac{-2}{-2}, \frac{-6}{-2} = 1, 3$ ✓

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

P $-2 = \frac{-4}{1} = \frac{c}{a} : P$

الف) $9 - 4(-2) = 9 + 8 = 17$ ✓

ب) $17 - 4(3 \times -2) = 17 + 24 = 41$ ✓