

$$الف) x^2 - 4x + 8 = 0 \Rightarrow x^2 - 4x + 9 = 1 \Rightarrow (x-2)^2 = 1 \Rightarrow x-2 = \pm 1 \begin{cases} x=3 \\ x=1 \end{cases}$$

$$ب) x^2 + 8x + 17 = 0 \Rightarrow x^2 + 8x + 14 = -2 \Rightarrow (x+4)^2 = 2 \Rightarrow x+4 = \pm \sqrt{2} \begin{cases} x = -4 + \sqrt{2} \\ x = -4 - \sqrt{2} \end{cases}$$

5

$$الف) x^2 - 10x + 4 = 0 \Rightarrow (x-2)(x-8) = 0 \begin{cases} x=2 \\ x=8 \end{cases}$$

5

$$ب) x^2 - 10x - 14 = 0 \Rightarrow (x-7)(x+2) = 0 \begin{cases} x=7 \\ x=-2 \end{cases}$$

$$الف) x^2 - 10x - 10 = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow \frac{10 \pm \sqrt{100 + 40}}{2} \Rightarrow x = \frac{10 \pm \sqrt{140}}{2}$$

$$ب) 10x^2 - 4x + \frac{1}{10} = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow \frac{4 \pm \sqrt{16 - 4}}{20} \Rightarrow x = \frac{4 \pm \sqrt{12}}{20}$$

5

$$الف) x^2 - 10x + 9 = 0 \Rightarrow (x-1)(x-9) = 0 \begin{cases} x=1 \\ x=9 \end{cases}$$

5

$$ب) 4x^2 + x - 10 = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = \frac{-1 \pm \sqrt{1 + 160}}{8} \Rightarrow x = \frac{-1 \pm \sqrt{161}}{8}$$

$$\Rightarrow \begin{cases} x = \frac{10}{4} \\ x = -1 \end{cases}$$

$$الف) 10x^2 - 14x + 5 = 0 \Rightarrow x^2 - 14x + 50 = 0 \Rightarrow (x-7)(x-7) = 0 \Rightarrow x=7$$

$$\begin{cases} x = 7 \div 1 = 7 \\ x = 5 \div 1 = 5 \end{cases}$$

$$ب) 10x^2 - 10x + 1 = 0 \Rightarrow x^2 - 10x + 1 = 0 \Rightarrow (x-1)(x-9) = 0 \Rightarrow x=1, x=9$$

$$\begin{cases} x = 10 \div 10 = 1 \\ x = 1 \div 10 = \frac{1}{10} \end{cases}$$

5

$$c_1) -12x^2 + 4x - 1 = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = \frac{-4 \pm \sqrt{16 - 48}}{-24} \Rightarrow x = \frac{-4 \pm \sqrt{-32}}{-24} \text{ دعداد } \underline{\underline{=}}$$

$$c_2) 12x^2 - x + 1 = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = \frac{+1 \pm \sqrt{1 - 48}}{24} \Rightarrow x = \frac{1 \pm \sqrt{-47}}{24} \text{ فاقدر الله } \underline{\underline{=}}$$

$$c_3) 12x^2 - 4x + 1 = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = \frac{4 \pm \sqrt{16 - 48}}{24} \Rightarrow x = \frac{4 \pm \sqrt{-32}}{24} \text{ دعداد } \underline{\underline{=}}$$

$$c_4) 12x^2 - x + 1 = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = \frac{1 \pm \sqrt{1 - 48}}{24} \Rightarrow x = \frac{1 \pm \sqrt{-47}}{24} \text{ فاقدر الله } \underline{\underline{=}}$$

$$a) \Delta > 0 \Rightarrow b^2 - 4ac > 0 \Rightarrow (-1)^2 + 4(1)(a) \Rightarrow \Delta = 9 - 4a \Rightarrow 9 - 4a > 0 \Rightarrow 9 > 4a \Rightarrow \frac{9}{4} > a$$

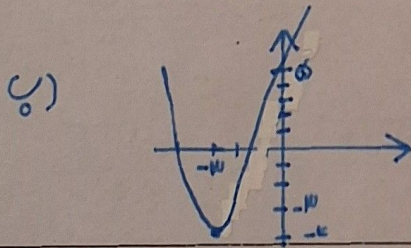
$$b) \Delta = 0 \Rightarrow b^2 - 4ac = 0 \Rightarrow 9 - 4a = 0 \Rightarrow 9 = 4a \Rightarrow a = \frac{9}{4}$$

$$c) \Delta < 0 \Rightarrow b^2 - 4ac < 0 \Rightarrow 9 - 4a < 0 \Rightarrow 9 < 4a \Rightarrow \frac{9}{4} < a$$

$$d) \Delta > 0 \Rightarrow b^2 - 4ac > 0 \Rightarrow 9 - 4a > 0 \Rightarrow 9 > 4a \Rightarrow \frac{9}{4} > a$$

$$y = x^2 + 4x + 4$$

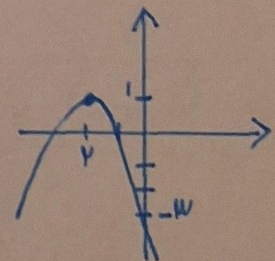
$$a) y = x^2 + 4x + 4 \Rightarrow \text{ext} \begin{cases} -\frac{b}{2a} = \frac{-4}{2} = -2 \\ -\frac{\Delta}{4a} = \frac{-16 + 16}{4} = 0 \end{cases} \Rightarrow \min(-2, 0)$$



$\min(-2, 0)$

$$y = -2x^2 + 4x - 1$$

$$a) y = -2x^2 + 4x - 1 \Rightarrow \text{ext} \begin{cases} -\frac{b}{2a} = \frac{-4}{-4} = 1 \\ -\frac{\Delta}{4a} = \frac{-16 + 8}{-8} = 1 \end{cases} \Rightarrow \max(1, 1)$$



$$b) y = 0 \Rightarrow -2x^2 + 4x - 1 = 0 \Rightarrow x^2 - 2x + 1 = 0 \Rightarrow (x-1)(x-1) = 0 \Rightarrow x=1 \text{ or } x=1 \Rightarrow (1, 0) \text{ or } (1, 0)$$

$$x^2 - 12x - 1 = 0$$

$$a) S^2 - 12P \Rightarrow S = \frac{-b}{a} \quad P = \frac{c}{a} \Rightarrow S = \frac{12}{1} = 12 \quad P = \frac{-1}{1} = -1 \Rightarrow (12)^2 - 12(-1) = 144 + 12 = 156$$

$$b) S^2 - 12SP \Rightarrow S = 12 \quad P = -1 \Rightarrow (12)^2 - 12(12)(-1) = 144 + 144 = 288$$