

الف) $x^2 - 6x + 8 = 0 \rightarrow x^2 - 6x + 9 = 1 \quad (x-3)(x-3) = 1 \quad (x-3)^2 = 1$
 $\sqrt{(x-3)^2} = \sqrt{1} \rightarrow x-3 = \pm 1 \quad x = 2, 4$

ب) $x^2 + 8x + 15 = 0 \rightarrow x^2 + 8x + 16 = 9 \quad (x+4)(x+4) = 3^2$
 $\sqrt{(x+4)^2} = \sqrt{3^2} \quad x+4 = \pm 3 \quad x = -7, -1$

الف) $x^2 - 4x + 4 = 0 \quad (x-2)(x-2) = 0 \quad x-2 = 0 \quad x = 2$
 $x-2 = 0$

ب) $x^2 - 4x - 12 = 0 \quad (x-6)(x+2) = 0 \quad x-6 = 0 \quad x = 6$
 $x+2 = 0$

الف) $x^2 - 3x - 4 = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = x = \frac{3 + \sqrt{9 + 20}}{2}, \frac{3 - \sqrt{9 + 20}}{2}$

ب) $2x^2 - 5x + \frac{1}{2} = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = x = \frac{5 \pm \sqrt{25 - 2}}{4}, \frac{5 \pm \sqrt{25 - 2}}{4}$
 $\frac{5 \pm 2\sqrt{11}}{4} = \frac{1}{2}(5 \pm \sqrt{11}) \quad x = \frac{5 + \sqrt{11}}{2}, \frac{5 - \sqrt{11}}{2}$

الف) $x^2 - 3x + 2 = 0 \quad (x-1)(x-2) = 0 \quad x-1 = 0 \quad x = 1$
 $x-2 = 0$

ب) $4x^2 + x - 3 = 0 \rightarrow x^2 + x - 12 = 0 \rightarrow (x+4)(x-3) = 0$
 $x = -4, 3$

الف) $4x^2 - 12x + 5 = 0 \quad x^2 - 3x + \frac{5}{4} = 0 \quad (x-1)(x-5) = 0$
 $x = 1, 5$

ب) $3x^2 - 10x + 7 = 0 \quad x^2 - 10x + 21 = (x-3)(x-7) = 0$
 $x = 3, 7$

$$\text{الف) } -3x^2 + 4x - 1 = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-4 \pm \sqrt{16}}{-6}$$

$$\text{ب) } 2x^2 - x + 1 = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad \sqrt{1-12} = \text{دلتا منفی}$$

$$\text{ج) } 2x^2 - 4x + 1 = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad \sqrt{16-12} = \text{دلتا مثبت}$$

$$\text{د) } 2x^2 - x + 1 = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad \frac{1 \pm \sqrt{1-12}}{-2}$$

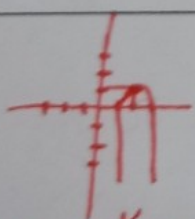
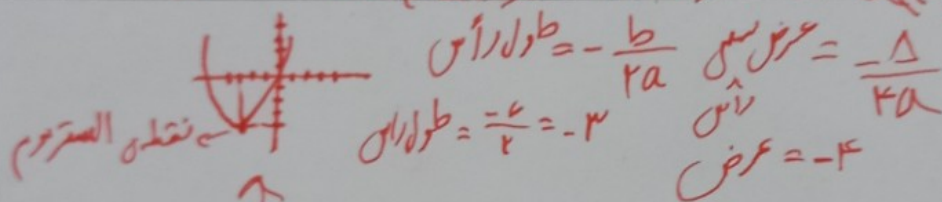
$$2x^2 - 4x + a = 0 \quad \frac{-b \pm \sqrt{\Delta}}{2a} \quad \Delta > 0$$

$$b^2 - 4ac > 0 \rightarrow 16 - 4a > 0 \rightarrow a < \frac{4}{1}$$

$$\Delta = 0 \quad b^2 - 4ac = 0 \quad 16 - 4a = 0 \quad a = \frac{4}{1} \rightarrow a = 4$$

$$\Delta < 0 \quad b^2 - 4ac < 0 \quad 16 - 4a < 0 \rightarrow \frac{4}{1} < a \rightarrow a > 4$$

$$\Delta \geq 0 \quad b^2 - 4ac \geq 0 \quad 16 - 4a \geq 0 \rightarrow a \leq \frac{4}{1}$$



$$\text{الف) } \text{عرض رأس} = -\frac{\Delta}{4a} = -\frac{16-16}{4} = 0$$

$$\text{ب) } \text{طول رأس} = -\frac{b}{2a} = -\frac{-4}{4} = 1$$

$$y = -x^2 + 4x - 3$$

$$0 = -x^2 + 4x - 3 \quad x^2 - 4x + 3 = 0 \rightarrow (x-1)(x-3) = 0$$

$$x = 1, 3 \rightarrow (1, 0), (3, 0)$$

نقطه الصفر

$$x^2 - 3x - 2 = 0$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{3 \pm \sqrt{17}}{2}$$

$$S = \frac{3}{2} = 1.5$$

$$P = \frac{(3+\sqrt{17})(3-\sqrt{17})}{4} = \frac{9-17}{4} = -2$$

$$\text{الف) } S^2 - 2P = (1.5)^2 - 2(-2) = 2.25 + 4 = 6.25$$

$$\text{ب) } S^2 - 3SP = (1.5)^2 - 3(1.5)(-2) = 2.25 + 9 = 11.25$$

$$17 + 11$$