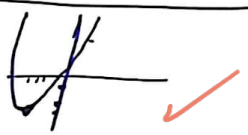


الف) $y = ax^2 + bx + c$ $ex + \frac{-b}{2a}$ $b = -4, a = 1$ $x_{ext} = \frac{-9}{2} = -4.5$
 $y = (-4.5)^2 + 4(-4.5) + 9 = 9 - 18 + 9 = 0$
 $\Rightarrow (-4.5, 0)$

1

9

ب) $a = 1$
 u_n



الف) $-\frac{b}{2a}$ $a = -1$ $b = 4$ $c = -3$ $x = \frac{-4}{2(-1)} = 2$
 $y = (-2)^2 + 4(-2) - 3 = 4 - 8 - 3 = -7$
 $(2, -7)$

110

2

$0 = -x^2 + 4x - 3$ $-x^2 + 4x - 3 = 0 \Rightarrow x^2 - 4x + 3 = 0$
 $\Rightarrow (x-1)(x-3) = 0$
 $(1, 0) (3, 0)$



$a = 2$ $b = -3$ $c = a$ $\Delta = (-3)^2 - 4(2)(2) = 9 - 16 = -7$

$2 - \Delta > 0$ $9 - 16a > 0 \Rightarrow a < \frac{9}{16}$

$9 - 16a > 0 \Rightarrow -16a > -9$
 $\Rightarrow a < \frac{9}{16}$

3

$3 - \Delta < 0$ $9 - 16a < 0 \Rightarrow a > \frac{9}{16}$

$3 - \Delta < 0$ $9 - 16a < 0$
 $\Rightarrow a > \frac{9}{16}$

4

الف) $x^2 - 2x - 1 = (x-1)^2 - 1 - 1 = (x-1)^2 - 2 \Rightarrow x-1 = \pm\sqrt{2} \Rightarrow x = 1 \pm \sqrt{2}$

ب) $x^2 - x - 1 = (x - \frac{1}{2})^2 - \frac{1}{4} - 1 = (x - \frac{1}{2})^2 - \frac{5}{4} \Rightarrow x - \frac{1}{2} = \pm\sqrt{\frac{5}{4}}$
 $\Rightarrow x = \frac{1}{2} \pm \frac{\sqrt{5}}{2}$

5

الف) $\Delta = (-2)^2 - 4 \cdot 1 \cdot (-1) = 4 + 4 = 8$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$

6

~~$x^2 - 4x + 1 = 0$~~
 $1^2 - 4 \cdot 1 \cdot (-4) = 1 + 16 = 17$
 $\Rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{17}}{2}$ $x_1 = \frac{-1 + \sqrt{17}}{2}$ $x_2 = \frac{-1 - \sqrt{17}}{2}$

محيطات

الف) $x^2 - 11x + 21 = 0 \rightarrow (x-5)(x-7) = 0$

$x = 5, 7$

110
6

ب) $x^2 + 3x - 21 = 0$

~~المعادلة~~

$(x-5)(x+7)$

$x^2 + 3x - 21 = 0 \rightarrow (x-5)(x+7)$

$x = 5, -7$

الف) $b^2 = (-12)^2 = 144$ $rac = 150$ $\Delta = 144 - 150 = -6$ $\Delta = b^2 - rac$

$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{12 \pm \sqrt{-6}}{10}$ $x_1 = \frac{12}{10}$ $x_2 = \frac{10}{10}$

110
7

$\Delta = (-10)^2 - 4 \cdot 3 \cdot 10 = 100 - 120 = -20$ $\sqrt{100} = 10$ $x_1 = \frac{10}{10} = 1$ $x_2 = \frac{10}{10} = 1$

الف) $x = \frac{-b \pm \sqrt{b^2 - rac}}{2a}$ $a = 2$ $b = -3$ $c = -2 \Rightarrow (-d)^2 - 4 \cdot 2 \cdot (-2) = 2d - 2 \cdot 2 = 1$

$\Rightarrow d^2 - 4 \cdot 2 \cdot (-2) = 2d - 2 \cdot 2 = 1$ $\Rightarrow d^2 + 16 = 2d - 4 = 1$ $\Rightarrow d^2 - 2d + 17 = 0$

$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{3 \pm \sqrt{1}}{4} = \frac{3 \pm 1}{4}$ $x_1 = \frac{3+1}{4} = 1$ $x_2 = \frac{3-1}{4} = \frac{1}{2}$

$S = \frac{-b}{a}$ $P = \frac{c}{a}$ $a = 1$ $b = -3$ $c = -2$

$S = \frac{-(-3)}{1} = 3$

$P = \frac{-2}{1} = -2$

$S^2 - 4P = 9 + 8 = 17$

$S^2 - 4PS = 25 + 12 = 37$

1
9

الف) $\frac{9!}{5! \cdot 4!} = 126$ $\frac{9!}{4! \cdot 5!} = 126$ $126 + 126 = 252$

$\frac{9!}{3! \cdot 6!} = 84$ $\frac{9!}{2! \cdot 7!} = 36$ $84 - 36 = 48$

110
10