

الف) $x^2 - 4x + 1 = 0 \Rightarrow x^2 - 4x + 9 = 1 \Rightarrow (x-3)^2 = 1 \Rightarrow x-3 = \pm 1$
 $x=4, x=2$

ب) $x^2 + 11x + 17 = 0 \Rightarrow x^2 + 11x + 14 = -9 \Rightarrow (x+4)^2 = 9 \Rightarrow x+4 = \pm 3$
 $x=-1, x=-7$

الف) $(x-2)(x-3) = 0 \rightarrow \begin{cases} x=2 \\ x=3 \end{cases}$

ب) $(x-7)(x+2) = 0 \rightarrow \begin{cases} x=7 \\ x=-2 \end{cases}$

الف) $\Delta = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow \Delta = \frac{3 \pm \sqrt{29}}{2} = x = \frac{3 \pm \sqrt{29}}{2}$

ب) $\Delta = \frac{4 \pm \sqrt{12}}{2(2)} = x = 1 \pm \frac{\sqrt{3}}{2}$

الف) $\Delta = \frac{3 \pm \sqrt{9-1}}{2} \Rightarrow \Delta = \frac{3 \pm \sqrt{1}}{2} = 2 \Rightarrow \Delta = \frac{3-1}{2} = 1$
 $x=2, x=1$

ب) $\Delta = \frac{-1 \pm \sqrt{1+16}}{2} \Rightarrow x = \frac{-1 \pm 4}{2} \Rightarrow x = \frac{3}{2}, x = -1$

الف) $x^2 - 12x + 36 = 0 \Rightarrow (x-6)(x-6) = 0 \Rightarrow x = \frac{6}{1} = 6$
 $x = \frac{6}{1}$

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

$$\alpha = 3 \Rightarrow 3x^2 + ax - 1 = 0$$

الف) $\Delta = (a)^2 - 4(3)(-1) = 2a^2 + 12 = 12 \Rightarrow \Delta > 0$

ب) $3x^2 - x + 2 = 0 \Rightarrow \alpha = 2 \Rightarrow \Delta = (-1)^2 - 4(3)(2) = -11 < 0$

ج) $3x^2 - 4x + 2 = 0 \Rightarrow \alpha = 2 \Rightarrow \Delta = (-4)^2 - 4(3)(2) = -8 < 0$

د) $3x^2 - x + 1 = 0 \Rightarrow \alpha = 2 \Rightarrow \Delta = (-1)^2 - 4(3)(1) = -11 < 0$

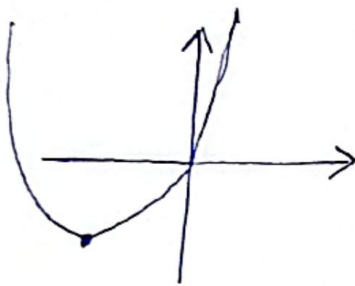
الف) $9 - 12\alpha > 0 \Rightarrow 12\alpha < 9 \Rightarrow \alpha < \frac{3}{4}$

$\alpha = 2, b = -3, c = a$
 $\Delta = (-3)^2 - 4(2)(a) = 9 - 8a$

ب) $9 - 12\alpha = 0 \Rightarrow 12\alpha = 9 \Rightarrow \alpha = \frac{3}{4}$

ج) $9 - 12\alpha < 0 \Rightarrow 12\alpha > 9 \Rightarrow \alpha > \frac{3}{4}$

د) $9 - 12\alpha \geq 0 \Rightarrow \alpha \leq \frac{3}{4}$

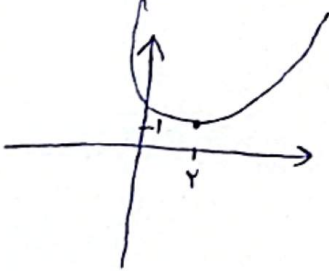


الف) $x = -\frac{b}{2a} = -\frac{-3}{2(1)} = \frac{3}{2}$

$y = (-3)^2 + 6(-3) + a = -4$

$x_0 = -\frac{f}{f'(x_0)} = -\frac{-4}{-2} = 2$

$y_0 = -(-2)^2 + 4(-2) - 3 = -11$



$x^2 - 4x + 3 = 0$

$(x-1)(x-3) = 0$

$(3, 1)$

$y = 0$

الف) $(3)^2 - 2(-2) = 9 + 4 = 13$

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

ب) $(3)^2 - 3(3)(-2) = 9 + 18 = 27$