

الف - $y = 4x^2 - 2x$ $a > 0 \rightarrow \text{Min}$
 $\Delta = b^2 - 4ac = 4 - 4 \times 4 \times 0 = 4$
 $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm 2}{8} = \frac{1}{2}, 0$
 $x = \frac{1}{2}$ از ناامیدی نمی نذرند.

ب - $y = -x^2 + 4x$ $a < 0 \rightarrow \text{Max}$
 $\Delta = b^2 - 4ac = 16 - 0 = 16$
 $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-4 \pm 4}{-2} = 0, 4$
 $x = 2$ از ناامیدی نمی نذرند.

الف - $y = 2x^2 - 5x + 2$ $a > 0 \rightarrow \text{Min}$
 $\Delta = b^2 - 4ac = 25 - 4 \times 2 \times 2 = 9$
 $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{5 \pm 3}{4} = 2, \frac{1}{2}$
 $x = \frac{1}{2}$ از ناامیدی نمی نذرند.

ب - $y = -x^2 + 4x - 1$ $a < 0 \rightarrow \text{Max}$
 $\Delta = b^2 - 4ac = 16 - 4 \times (-1) \times (-1) = 12$
 $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-4 \pm \sqrt{12}}{-2} = 2 \pm \sqrt{3}$
 $x = 2 + \sqrt{3}$ از ناامیدی نمی نذرند.

الف - $\alpha + \beta = 0$
 $\alpha - \beta = \frac{\sqrt{13}}{13}$
 $\Delta = 1 - 4 \times 1 \times 1 = -3$
 $\alpha^2 + \beta^2 = 2 - 2P = 1 - (c/a) = 1 - (-1) = 2$
 $P = c/a = -1$

ب - $\alpha^2 + \beta^2 = 2 - 2PS = 1 - 4 \times 1 \times 1 = 1 - 4 = -3$
 $\alpha^2 - \beta^2 = (\alpha - \beta)(\alpha^2 + \beta^2 + \alpha\beta) = \frac{\sqrt{13}}{13} \times (-3) = -\frac{3\sqrt{13}}{13}$
 $5 - 3 = 2$

الف - $y = (x-2)(x^2 - ax + a)$
 $\Delta = a^2 - 4a \times 0 = a^2$
 $a = 4$
 $(x-2)^2 = x^2 - 4x + 4$

ب - $x^2 - 11x + 9 = 0$
 $x^2 - 4x + 4 = 0$
 $(x-1)(x-4) = 0$
 $x = 1, 4$
 $\cos 47^\circ$

الف - $3x^2 - 12x - a = 0$
 $2\alpha^2 + \beta^2 - 4\alpha = 7$
 $\alpha^2 + \beta^2 = 2 - 2P = 12 + \frac{a}{3}$
 $\alpha^2 - 4\alpha = \frac{a}{3}$
 $9 + a = 0 \rightarrow a = -9$

ب - $3x^2 - 11x + a = 0$
 $x^2 - 4x + 4 = 0$
 $(x-1)(x-4) = 0$
 $x = 1, 4$
 $\frac{a}{3} = \frac{9}{3} = 3$

