

جدول مشترک و به توان ۲

الف) $x^2 - 11x + 28 = 0 \rightarrow (x - 7)(x - 4) \rightarrow x - 7 = 0 \rightarrow x = 7$
 $x - 4 = 0 \rightarrow x = 4$

ب) $x^2 + 3x - 28 = 0 \rightarrow (x + 7)(x - 4) \rightarrow x + 7 = 0 \rightarrow x = -7$
 $x - 4 = 0 \rightarrow x = 4$

الف) $5x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + (5 \times 7) = 0 \rightarrow x^2 - 12x + 35 = 0$
 $(x - 7)(x - 5) \rightarrow x - 7 = 0 \rightarrow x = 7$
 $x - 5 = 0 \rightarrow x = 5$

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

الف) $2x^2 - 5x + 3 = 0 \rightarrow x^2 - 5x + 6 = 0 \rightarrow (x - 2)(x - 3)$
 $x - 2 = 0 \rightarrow x = 2$
 $x - 3 = 0 \rightarrow x = 3$

ب) $2x^2 + 5x + 3 = 0 \rightarrow x^2 + 5x + 6 = 0 \rightarrow (x + 2)(x + 3) \rightarrow x + 2 = 0 \rightarrow x = -2$
 $x + 3 = 0 \rightarrow x = -3$

ج) $2x^2 - 5x + 1 = 0$
 $x_1 = \frac{5 + \sqrt{25 - 4 \times 2 \times 1}}{2 \times 2} = \frac{5 + \sqrt{17}}{4}$
 $x_2 = \frac{5 - \sqrt{17}}{4}$

د) $4x^2 + 7x + 9 = 0$
 $x_1 = \frac{-7 + \sqrt{49 - 144}}{8}$
 زیرا رادیکال که همان Δ است منفی است پس جواب ندارد.
 $\Delta < 0$

$x^2 - 3x - 2 = 0$
 $x_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \rightarrow x_1 = \frac{3 + \sqrt{9 + 8}}{2} = \frac{3 + \sqrt{17}}{2}$
 $x_2 = \frac{3 - \sqrt{17}}{2}$
 جمع ریشه ها $= \frac{3 + \sqrt{17}}{2} + \frac{3 - \sqrt{17}}{2} = \frac{6}{2} = 3 = \frac{-b}{a}$
 ضرب ریشه ها $= \frac{(3 + \sqrt{17})(3 - \sqrt{17})}{4} = \frac{9 - 17}{4} = \frac{-8}{4} = -2 = \frac{c}{a}$

الف) $5^r - 2^p = 3 - 2(-2) \rightarrow 9 + 4 = 13$

ب) $5^r - 3^s p \rightarrow 3^r - 3(3)(-2) = 27 + 18 = 45$

الف) $\binom{9}{5} + \binom{9}{2} = \frac{9!}{(9-5)!5!} + \frac{9!}{(9-2)!2!} = \frac{9!}{4!5!} + \frac{9!}{7!2!} = 252 + 36 = 288$
 $\binom{n}{k} = \frac{n!}{(n-k)!k!}$
 $252 + 36 = 288$

ب) $\binom{9}{2} - \binom{1}{2} = \frac{9!}{(9-2)!2!} - \frac{1!}{(1-2)!2!} = \frac{9!}{7!2!} - \frac{1!}{(-1)!2!} = 36 - 1 = 35$
 $\frac{1!}{(-1)!2!} = \frac{1}{1 \times 2} = \frac{1}{2}$
 $36 - \frac{1}{2} = 35.5$