Bipin Nambiar
(SBI PO 2018)

Shiraz Khan
(SBI Clerk 2018)

Kuldeep Yadav
(SBI PO 2018)

Rajat Saxena
(IBPS Clerk 2018)

Anupam Tyagi
(IBPS PO 2018)

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The Question Bank

Quadratic Equation Questions for IBPS Clerk Pre, SBI Clerk Pre and IBPS RRB.

Directions: In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer.

1.   I. $x^3 - 4913 = 0$ II. $y^2 - 361 = 0$

A. if x < y   B. if x ≤ y   C. if x > y   D. if x ≥ y
E. if x = y or relationship between x and y can't be established

2.   I. $x^2 = 361$ II. $y^3 = 7269 + 731$

A. if x < y   B. if x > y   C. if x ≥ y   D. if x ≤ y
E. if x = y or relationship between x and y can't be established

3.   I. $15x^2 + x - 6 = 0$ II. $5y^2 - 23y + 12 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

4.   I. $x^3 - 2744 = 0$ II. $y^2 - 256 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

5.   I. $x^2 - 8x - 20 = 0$ II. $3y^2 - 60y + 297 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

6.   I. $2x^2 + 9x + 7 = 0$ II. $y^2 + 4y + 4 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

7.   I. $x^2 - 7x + 12 = 0$ II. $3y^2 - 11y + 10 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

8.   I. $2x^2 + 15x + 28 = 0$ II. $2y^2 + 13y + 21 = 0$

A. if x > y   B. if x ≥ y   C. if x < y   D. if x ≤ y
E. if x = y or relationship between x and y can't be established

9.   I. $x^2 - 8x + 15 = 0$ II. $y^2 - 12y + 36 = 0$

A. if x > y   B. if x ≥ y   C. if x < y   D. if x ≤ y
E. if x = y or relationship between x and y can't be established

10.   I. $x^2 + 9x + 20 = 0$ II. $y^2 = 16$

A. if x > y   B. if x ≥ y   C. if x < y   D. if x ≤ y
E. if x = y or relationship between x and y can't be established

11.   I. $x^2 + (343)^{1/3} = 56$ II. $(y)^{4/3} \times (y)^{5/3} - 295 = 217$
A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

12.   I. $5x + 4y = 8$ II. $3x + 2y = 4$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

13.   I. $x^2 + 8 = 6x$ II. $y^2 + 15 = 8y$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

14.   I. $\sqrt{49} + \sqrt{x + 15} = \sqrt{169}$ II. $y^2 - 212 = 364$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

15.   I. $x^2 - \dfrac{(10)^{5/2}}{\sqrt{x}} = 0$ II. $\dfrac{18}{\sqrt{y}} - \sqrt{y} = \dfrac{7}{\sqrt{y}}$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

16.   I. $2x^2 + 7x + 5 = 0$ II. $3y^2 + 5y + 2 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

17.   I. $2x^2 - 13x + 21 = 0$ II. $3y^2 - 14y + 15 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x ≤ y or no relationship can be established between x and y.

18.   I. $2x^2 - 13x + 18 = 0$ II. $y^2 - 7y + 12 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

19.   I. $x^2 + 6x + 9 = 0$ II. $y^2 - y - 20 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

20.   I. $3x^2 - 10x + 8 = 0$ II. $2y^2 - 19y + 35 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

21.   I. $x^2 - 3 = 2x$ II. $y^2 + 5y + 6 = 0$

A. if x > y   B. if x < y   C. if x ≥ y   D. if x ≤ y
E. if x = y or relationship between x and y can't be established

22.   I. $x^2 - 25x + 114 = 0$ II. $y^2 - 10y + 24 = 0$

A. if x > y   B. if x < y   C. if x ≥ y   D. if x ≤ y
E. if x = y or relationship between x and y can't be established

23.   I. $\dfrac{4}{\sqrt{x}} + \dfrac{6}{\sqrt{x}} = 5\sqrt{x}$ II. $y^2 + \sqrt{256} = \sqrt{625}$

A. if x > y   B. if x < y   C. if x ≤ y
D. if x = y or relationship between x and y can't be established

24.   I. $x^2 - 7\sqrt{3}\,x + 36 = 0$ II. $y^2 - 11\sqrt{3}\,y + 84 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y
D. if x < y   E. if x = y or relationship between x and y can't be established

25.   I. $x^2 = 361$ II. $y^3 = 7269 + 731$

A. if x > y   B. if x ≤ y   C. if x < y
D. if x ≥ y   E. if x = y or relationship between x and y can't be established

26.   I. $x^2 + 5x + 6 = 0$ II. $y^2 - 4y - 12 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y
D. if x = y or relationship between x and y can't be established   E. if x < y

27. **I.** $25x^2 - 90x + 72 = 0$ **II.** $y^2 + 26y + 168 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

28. **I.** $3x^2 - 8x - 16 = 0$ **II.** $3y^2 - 19y + 28 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

29. **I.** $12x^2 - 4x - 5 = 0$ **II.** $8y^2 - 4y - 4 = 0$

A. if x > y   B. if x < y   C. if x = y   D. if x ≥ y
E. if x ≤ y or no relationship can be established between x and y.

30. **I.** $6x^2 - 13x - 44 = 0$ **II.** $4y^2 - 17y - 42 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

31. **I.** $3x + 5y = 34.5$ **II.** $4x - 9y = -1$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

32. **I.** $35x^2 + 4x - 63 = 0$ **II.** $7y^2 - 4y - 20 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

33. **I.** $x^2 - 1089 = 0$ **II.** $3y^2 - 363 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

34. **I.** $x^2 - 4\sqrt{7}x + 21 = 0$ **II.** $2y^2 - 8\sqrt{5}y - 50 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

35. **I.** $3x^2 - 8x - 16 = 0$ **II.** $3y^2 - 19y + 28 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

36. I. $3x^2 - 5x - 12 = 0$ II. $2y^2 + 15y + 25 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

37. I. $12x^2 - 4x - 5 = 0$ II. $8y^2 - 4y - 4 = 0$

A. if x > y   B. if x < y   C. if x = y   D. if x ≥ y
E. if x ≤ y or no relationship can be established between x and y.

38. I. $2x + 3y = 77$ II. $3x + 5y = 124$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

39. I. $x^2 - 4(\sqrt{2} + \sqrt{5})x + 16\sqrt{10} = 0$ II. $y^2 - 5(\sqrt{3} + 2\sqrt{2})y + 50\sqrt{6} = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

40. I. $x^2 - 4\sqrt{3}x + 9 = 0$ II. $y^2 - \sqrt{3}y - 18 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

41. I. $x^2 - 9x + 20 = 0$ II. $2y^2 - 15y + 28 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

42. I. $x^2 - x - 20 = 0$ II. $y^2 + y - 30 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

43. I. $x^2 - 9x + 18 = 0$ II. $y^2 - 9\sqrt{2}y + 36 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

44. I. $x^2 - 9 = 0$ II. $2y^2 + 13y + 21 = 0$

A. if x > y   B. if x ≤ y   C. if x ≥ y   D. if x < y
E. if x = y or relationship between x and y can't be established

45. I. $5x^2 + 11x - 12 = 0$ II. $4y^2 - 13y - 12 = 0$

A. if $x > y$ B. if $x \le y$ C. if $x \ge y$ D. if $x < y$
E. if $x = y$ or relationship between x and y can't be established

46. I. $x^2 + 16x + 63 = 0$ II. $y^2 + 13y + 42 = 0$

A. if $x > y$ B. if $x \le y$ C. if $x \ge y$ D. if $x < y$
E. if $x = y$ or relationship between x and y can't be established

47. I. $2x^2 + 3x - 20 = 0$ II. $2y^2 + 15y + 28 = 0$

A. if $x > y$ B. if $x \le y$ C. if $x \ge y$ D. if $x < y$
E. if $x = y$ or relationship between x and y can't be established

48. I. $x^2 - 13.5x + 38 = 0$ II. $y^2 - 1.5y - 10 = 0$

A. if $x > y$ B. if $x \le y$ C. if $x \ge y$ D. if $x < y$
E. if $x = y$ or relationship between x and y can't be established

49. I. $x^2 + 11x + 30 = 0$ II. $y^2 + y - 20 = 0$

A. if $x > y$ B. if $x \le y$ C. if $x \ge y$ D. if $x < y$
E. if $x = y$ or relationship between x and y can't be established

50. I. $4x^2 - 216 = 0$ II. $5y^3 - 810\sqrt{6} = 0$

A. if $x > y$ B. if $x \le y$ C. if $x \ge y$ D. if $x < y$
E. if $x = y$ or relationship between x and y can't be established

CORRECT OPTIONS:

1	2	3	4	5	6	7	8	9	10
E	A	B	E	E	E	A	D	C	D

11	12	13	14	15	16	17	18	19	20
D	D	E	E	D	B	C	E	E	D

21	22	23	24	25	26	27	28	29	30
A	C	D	B	A	B	A	E	E	E

31	32	33	34	35	36	37	38	39	40
A	E	E	E	E	A	E	D	E	E

41	42	43	44	45	46	47	48	49	50
C	E	E	C	E	B	E	C	B	B

EXPLANATIONS:

1. I. $x^3 - 4913 = 0$
or, $x^3 = 4913$
$x = 17$

II. $y^2 = 361$
or, $y = \pm 19$

While comparing the values of x and y, one root value of y lies between the root values of x
Hence, option E is correct.

2. I. $x^2 = 361$
$x = \pm 19$

II. $y^3 = 7269 + 731$
$y^3 = 8000$
$y = 20$

$x < y$
Hence, option A is correct.

3. I. $15x^2 + x - 6 = 0$
$15x^2 + 10x - 9x - 6 = 0$
$5x (3x + 2) - 3 (3x + 2) = 0$
$(5x - 3) (3x + 2) = 0$
$x = \dfrac{3}{5}, -\dfrac{2}{3}$

II. $5y^2 - 23y + 12 = 0$
$5y^2 - 20y - 3y + 12 = 0$
$5y (y - 4) - 3 (y - 4) = 0$
$(y - 4) (5y - 3) = 0$
$y = 4, \dfrac{3}{5}$

$x \leq y$
Hence, option B is correct.

4. **I.** $x^3 - 2744 = 0$

$x^3 = 2744$

$x = 14$

II. $y^2 - 256 = 0$

$y^2 = 256$

$y = \pm 16$

While comparing the values of x and y, one root value of x lies between the root values of y.

Hence, option E is correct.

5. **I.** $x^2 - 8x - 20 = 0$

$\Rightarrow x^2 - 10x + 2x - 20 = 0$

$\Rightarrow x(x - 10) + 2(x - 10) = 0$

$\Rightarrow (x - 10)(x + 2) = 0$

Then, $x = + 10$ or $x = - 2$

II. $3y^2 - 60y + 297 = 0$

$\Rightarrow y^2 - 20y + 99 = 0$ [Dividing both sides by 3]

$\Rightarrow y^2 - 11y - 9y + 99 = 0$

$\Rightarrow y(y - 11) - 9(y - 11) = 0$

$\Rightarrow (y - 11)(y - 9) = 0$

Then, $y = + 11$ or $y = + 9$

So, when $x = + 10$, $x < y$ for $y = + 11$ and $x > y$ for $y = + 9$

And when $x = - 2$, $x < y$ for $y = + 11$ and $x < y$ for $y = + 9$

∴ So, we can observe that one root value of x lies between the root values of y. Therefore, the relation between x and y can't be determined.

Hence, option (E) is correct.

6. **I.** $2x^2 + 9x + 7 = 0$

or, $2x^2 + 2x + 7x + 7 = 0$

or, $2x(x + 1) + 7(x + 1) = 0$

or, $(2x + 7)(x + 1) = 0$

∴ $x = -1, -\dfrac{7}{2}$

II. $y^2 + 4y + 4 = 0$

or, $y^2 + 2y + 2y + 4 = 0$

or, $y(y + 2) + 2(y + 2) = 0$

or, $(y + 2)(y + 2) = 0$

∴ $y = -2, -2$

Hence, relationship can't be established between x and y.

Therefore, Option E is correct.

7. **I.** $x^2 - 7x + 12 = 0$

or, $x^2 - 4x - 3x + 12 = 0$

or, $x(x - 4) - 3(x - 4) = 0$

or, $x(x - 4) - 3(x - 4) = 0$

or, $(x - 4)(x - 3) = 0$

∴ $x = 3, 4$

II. $3y^2 - 11y + 10 = 0$

or, $3y^2 - 6y - 5y + 10 = 0$

or, $3y(y - 2) - 5(y - 2) = 0$

or, $(3y - 5)(y - 2) = 0$

∴ $y = 2, \dfrac{5}{3}$

Hence, x > y

Hence, option A is correct.

8.   **I.** $2x^2 + 15x + 28 = 0$
or, $2x^2 + 8x + 7x + 28 = 0$
or, $2x (x + 4) + 7 (x + 4) = 0$
or, $(2x + 7) (x + 4) = 0$
∴ $x = -4, -\dfrac{7}{2}$

II. $2y^2 + 13y + 21 = 0$
or, $2y^2 + 6y + 7y + 21 = 0$
or, $2y (y + 3) + 7 (y + 3) = 0$
or, $(2y + 7) (y + 3) = 0$
∴ $y = -3, -\dfrac{7}{2}$

Hence, $x \leq y$.
Therefore, Option D is the correct answer.

9.   **I.** $x^2 - 8x + 15 = 0$
or, $x^2 - 5x - 3x + 15 = 0$
or, $x (x - 5) - 3 (x - 5) = 0$
or, $(x - 5) (x - 3) = 0$
∴ $x = 5, 3$

II. $y^2 - 12y + 36 = 0$
or, $y^2 - 6y - 6y + 36 = 0$
or, $y(y - 6) - 6 (y - 6) = 0$
or, $(y - 6) (y - 6) = 0$
∴ $y = 6, 6$

Hence, $x < y$.
Hence, option C is correct.

10.   **I.** $x^2 + 9x + 20 = 0$
or, $x^2 + 4x + 5x + 20 = 0$
or, $x (x + 4) + 5 (x + 4) = 0$
or, $(x + 4) (x + 5) = 0$
$x = -4, -5$

II. $y^2 = 16$
$y = \sqrt{16} = \pm 4$

While comparing the x and y values, we got one value of x is equal to y and other values is less than the root values of y.
Hence, $x \leq y$.
Hence, option D is correct.

11.　**I.** $x^2 + (343)^{1/3} = 56$

$x^2 + 7 = 56$

$x^2 = 49$

∴　$x = \sqrt{49} = \pm 7$

II. $(y)^{4/3} \times (y)^{5/3} - 295 = 217$

$(y)^3 = 217 + 295$

$(y)^3 = 512 = (8)^3$

or, $y = 8$

Here, $x < y$

Hence, option D is correct.

12.　$5x + 4y = 8$　　　.......(i) × 3

　　$3x + 2y = 4$　　　.......(ii) × 5

　　$15x + 12y = 24$　.......(iii)

　　$15x + 10y = 20$　.......(iv)

　　　$\underline{-\quad -\quad -\quad}$

　　　　$2y = 4$

　　　　$y = 2$

Putting the value of y in (i), we get

$5x + 8 = 8$

$5x = 0$

∴ $x = 0$

Here, $x < y$

Hence, option D is correct.

13. I. $x^2 + 8 = 6x$

$x^2 - 6x + 8 = 0$

$x^2 - 4x - 2x + 8 = 0$

$x(x - 4) - 2(x - 4) = 0$

$(x - 2)(x - 4) = 0$

∴ x = 2, 4

II. $y^2 - 8y + 15 = 0$

$y^2 - 5y - 3y + 15 = 0$

$y(y - 5) - 3(y - 5) = 0$

$(y - 3)(y - 5) = 0$

y = 3, 5

Here, while comparing the root values of x and y, we find that one root value of y lies between the value of x. Therefore, no relationship between x and y can be established

Hence, option E is correct.

14. I. $\sqrt{49} + \sqrt{x + 15} = \sqrt{169}$

$7 + \sqrt{x + 15} = 13$

$(\sqrt{x + 15})^2 = (6)^2$

x + 15 = 36

∴ x = 36 − 15 = 21

II. $y^2 - 212 = 364$

$y^2 = 364 + 212$

$y^2 = 576$

y = ± 24

Here, relationship between x and y cannot be established

Hence, option E is correct.

15.

I. $x^2 - \dfrac{(10)^{5/2}}{\sqrt{x}} = 0$

$x^{2+1/2} - (10)^{5/2} = 0$

$(x)^{5/2} = (10)^{5/2}$

$x = 10$

II. $\dfrac{18}{\sqrt{y}} - \sqrt{y} = \dfrac{7}{\sqrt{y}}$

$18 - y = 7$

$y = 11$

Here, x < y

Hence, option D is correct.

16. I. $2x^2 + 7x + 5 = 0$
$\Rightarrow 2x^2 + 2x + 5x + 5 = 0$
$\Rightarrow 2x\,(x + 1) + 5\,(x + 1) = 0$
$\Rightarrow (2x + 5)\,(x + 1) = 0$
$x = -2.5, -1$

II. $3y^2 + 5y + 2 = 0$
$\Rightarrow 3y^2 + 3y + 2y + 2 = 0$
$\Rightarrow 3y\,(y + 1) + 2\,(y + 1) = 0$
$\Rightarrow (3y + 2)\,(y + 1) = 0$
$y = -0.66, -1$

For x = − 2.5 and y = − 0.66, − 1   x < y

For x = − 1 and y = − 0.66, − 1   x ≤ y

Hence x is either less than or equal to y.

Hence, option B is correct.

17. **I.** $x^2 + 6x - 112 = 0$
$x^2 + 14x - 8x - 112 = 0$
$x(x + 14) - 8(x + 14) = 0$
$(x + 14)(x - 8) = 0$
$x = 8, -14$

II. $y^2 + 22y + 112 = 0$
$y^2 + 8y + 14y + 112 = 0$
$y(y + 8) + 14(y + 8) = 0$
$(y + 8)(y + 14) = 0$
$y = -8, -14$

For, $x = -14$ and $y = -8$
$x < y$

For, $x = -14$ and $y = -14$
$x = y$

But for $x = 8$ and $y = -8$ and -14
$x > y$

Therefore, relationship can't be established

Hence, option E is correct.

18. **I.** $2x^2 - 13x + 18 = 0$
$\Rightarrow 2x^2 - 4x - 9x + 18 = 0$
$\Rightarrow 2x(x - 2) - 9(x - 2) = 0$
$\Rightarrow (2x - 9)(x - 2) = 0$
$x = 4.5, 2$

II. $y^2 - 7y + 12 = 0$
$\Rightarrow y^2 - 4y - 3y + 12 = 0$
$\Rightarrow y(y - 4) - 3(y - 4) = 0$
$\Rightarrow (y - 3)(y - 4) = 0$
$y = 4, 3$
For $x = 4.5$ and $y = 4, 3$ $x > y$

For $x = 2$ and $y = 4, 3$ $x < y$

Hence, no relationship can be established

Hence, option E is correct.

19. I. $x^2 + 6x + 9 = 0$

$\Rightarrow x^2 + 3x + 3x + 9 = 0$

$\Rightarrow x(x + 3) + 3(x + 3) = 0$

$\Rightarrow (x + 3)(x + 3) = 0$

$x = -3, -3$

II. $y^2 - y - 20 = 0$

$\Rightarrow y^2 - 5y + 4y - 20 = 0$

$\Rightarrow y(y - 5) + 4(y - 5) = 0$

$\Rightarrow (y + 4)(y - 5) = 0$

$y = -4, 5$

For $x = -3$ and $y = -4$, $x > y$

For $x = -3$ and $y = 5$, $x < y$

Hence, no relationship can be established

Hence, option E is correct.

20. I. $3x^2 - 10x + 8 = 0$

$\Rightarrow 3x^2 - 6x - 4x + 8 = 0$

$\Rightarrow 3x(x - 2) - 4(x - 2) = 0$

$\Rightarrow (3x - 4)(x - 2) = 0$

$x = 4/3, 2$

II. $2y^2 - 19y + 35 = 0$

$\Rightarrow 2y^2 - 14y - 5y + 35 = 0$

$\Rightarrow 2y(y - 7) - 5(y - 7) = 0$

$\Rightarrow (2y - 5)(y - 7) = 0$

$y = 2.5, 7$

Hence, $x < y$

Hence, option D is correct.

21.   **I.** $x^2 - 3 = 2x$

∴ $x^2 - 2x - 3 = 0$

∴ $x^2 - 3x + x - 3 = 0$

∴ $(x + 1)(x - 3) = 0$

∴ $x = 3$ or $x = -1$

II. $y^2 + 5y + 6 = 0$

∴ $y^2 + 3y + 2y + 6 = 0$

∴ $(y + 3)(y + 2) = 0$

∴ $y = -3$ or $y = -2$

For both values of x,   x > y

Hence, option A is correct

22.   **I.** $x^2 - 25x + 114 = 0$

∴ $x^2 - 19x - 6x + 114 = 0$

∴ $(x - 6)(x - 19) = 0$

∴ $x = 19$ or $x = 6$

II. $y^2 - 10y + 24 = 0$

∴ $y^2 - 6y - 4y + 24 = 0$

∴ $(y - 4)(y - 6) = 0$

∴ $y = 6$ or $y = 4$

When x = 19, x > y

When x = 6, x ≥ y

Hence, x ≥ y

Hence, option C is correct.

23. **I.** $\dfrac{4}{\sqrt{x}} + \dfrac{6}{\sqrt{x}} = 5\sqrt{x}$

or, $\dfrac{4+6}{\sqrt{x}} = 5\sqrt{x}$

10 = 5x

x = 2

II. $y^2 + \sqrt{256} = \sqrt{625}$

$y^2 + 16 = 25$

$y^2 = 25 - 16$

$y^2 = 9$

$y = \pm 3$

While comparing the values of x and y, one root value of y lies between the two root values of x
Hence, option D is correct.

24. **I.** $x^2 - 7\sqrt{3}\,x + 36 = 0$

$\Rightarrow x^2 - 4\sqrt{3}\,x - 3\sqrt{3}\,x + 36 = 0$

$\Rightarrow x\,(x - 4\sqrt{3}) - 3\sqrt{3}\,(x - 4\sqrt{3}) = 0$

$\Rightarrow (x - 3\sqrt{3})\,(x - 4\sqrt{3}) = 0$

$\therefore x = 3\sqrt{3},\ 4\sqrt{3}$

II. $y^2 - 11\sqrt{3}\,y + 84 = 0$

$\Rightarrow y^2 - 4\sqrt{3}\,y - 7\sqrt{3}\,y + 84 = 0$

$\Rightarrow y\,(y - 4\sqrt{3}) - 7\sqrt{3}\,(y - 4\sqrt{3}) = 0$

$\Rightarrow (y - 7\sqrt{3})\,(y - 4\sqrt{3}) = 0$

$\therefore y = 7\sqrt{3},\ 4\sqrt{3}$

Now, While comparing the root values of x and y

  x   y
3√3   <   4√3
3√3   <   7√3
4√3   =   4√3
4√3   <   7√3

Here, x ≤ y
Hence, option (B) is correct.

25.   **I.** $x^2 = 361$
$x = \pm 19$

II. $y^3 = 7269 + 731$
$y^3 = 8000$
$y = 20$

$x < y$

Hence, option A is correct.

26.   **I.** $x^2 + 5x + 6 = 0$
$\Rightarrow x^2 + 3x + 2x + 6 = 0$
$\Rightarrow x(x + 3) + 2(x + 3) = 0$
$\Rightarrow (x + 2)(x + 3) = 0$
$\therefore x = -2, -3$

II. $y^2 - 4y - 12 = 0$
$\Rightarrow y^2 - 6y + 2y - 12 = 0$
$\Rightarrow y(y - 6) + 2(y - 6) = 0$
$\Rightarrow (y + 2)(y - 6) = 0$
$\therefore y = -2, +6$

Now, While comparing the root values of x and y
$\quad$ x $\qquad$ y
$-2 = -2$
$-2 < +6$
$-3 < -2$
$-3 < +6$

Here, $x \leq y$

Hence, option (B) is correct.

27. I. $25x^2 - 90x + 72 = 0$

$\Rightarrow (5x - 6)(5y - 12) = 0$

$\Rightarrow x = \dfrac{6}{5}, \dfrac{12}{5}$

II. $y^2 + 26y + 168 = 0$

$\Rightarrow (y + 12)(y + 14) = 0$

$\Rightarrow y = -12, -14$

Hence, x > Y

Hence, option A is correct.

28. I. $3x^2 - 8x - 16 = 0$

$\Rightarrow (3x + 4)(x - 4) = 0$

$\Rightarrow x = -\dfrac{4}{3}, 4$

II. $3y^2 - 19y + 28 = 0$

$\Rightarrow (3y - 7)(y - 4) = 0$

$\Rightarrow y = \dfrac{7}{3}, 4$

Hence, relationship between x and y cannot be determined.

Hence, option E is correct.

29. I. $12x^2 - 4x - 5 = 0$

$\Rightarrow 12x^2 - 10x + 6x - 5 = 0$

$\Rightarrow 6x(2x + 1) - 5(2x + 1) = 0$

$\Rightarrow (6x - 5)(2x + 1) = 0$

$\therefore x = \dfrac{5}{6}$ or $\dfrac{-1}{2}$

II. $8y^2 - 4y - 4 = 0$

$\Rightarrow 8y^2 - 8y + 4y - 4 = 0$

$\Rightarrow 8y(y - 1) + 4(y - 1) = 0$

$\Rightarrow (8y + 4)(y - 1) = 0$

$\therefore y = \dfrac{-1}{2}$ or $y = 1$

So, here we can't say anything.
Hence, option E is correct.

30. **I.** $6x^2 - 13x - 44 = 0$

$6x^2 - 24x + 11x - 44 = 0$

$6x(x - 4) + 11(x - 4) = 0$

$(6x + 11)(x - 4) = 0$

$x = 4, -\dfrac{11}{6}$

II. $4y^2 - 17y - 42 = 0$

$4y^2 - 24y + 7y - 42 = 0$

$4y(y - 6) + 7(y - 6) = 0$

$(4y + 7)(y - 6) = 0$

$y = 6, -\dfrac{7}{4}$

Hence Relationship cannot be established.

Therefore, option E is correct.

31. Multiplying equation (I) by 4 and equation (II) by 3 we get,

$12x + 20y = 138$

$12x - 27y = -3$

Subtracting both equations:

$47y = 141$

$y = 3$

$4x - 9y = -1$

$4x - 9(3) = -1$

$4x - 27 = -1$

$4x = 27 - 1$

$4x = 26$

$x = \dfrac{26}{4} = \dfrac{13}{2}$

$x > y$

Hence, option A is correct.

32. **I.** $35x^2 + 4x - 63 = 0$
$35x^2 + 49x - 45x - 63 = 0$
$7x(5x + 7) - 9(5x + 7) = 0$
$(7x - 9)(5x + 7) = 0$

$x = \dfrac{9}{7}, -\dfrac{7}{5}$

II. $7y^2 - 4y - 20 = 0$
$7y^2 - 14y + 10y - 20 = 0$
$7y(y - 2) + 10(y - 2) = 0$
$(y - 2)(7y + 10) = 0$

$y = 2, -\dfrac{10}{7}$

Therefore, relationship can't be established

Hence, option E is correct.

33. **I.** $x^2 - 1089 = 0,$
$x = \pm 33$

II. $3y^2 - 363 = 0,$
$3y^2 = 363,$
$y^2 = 121$
$y = \pm 11$

Therefore, relationship cannot be established

Hence, option E is correct.

34.   **I.** $x^2 - 4\sqrt{7}x + 21 = 0$

$\Rightarrow x^2 - \sqrt{7}x - 3\sqrt{7}x + 21 = 0$

$\Rightarrow x (x - \sqrt{7}) - 3\sqrt{7} (x - \sqrt{7}) = 0$

$\Rightarrow (x - \sqrt{7})(x - 3\sqrt{7}) = 0$

$\Rightarrow x = \sqrt{7}, 3\sqrt{7}$

II. $2y^2 - 8\sqrt{5}y - 50 = 0$
$\Rightarrow 2y^2 - 8\sqrt{5}y - 50 = 0$
Taking 2 as a common term, we get
$\Rightarrow y^2 - 4\sqrt{5}y - 25 = 0$
$\Rightarrow y^2 + \sqrt{5}y - 5\sqrt{5}y - 25 = 0$
$\Rightarrow y(y + \sqrt{5}) - 5\sqrt{5} (y + \sqrt{5}) = 0$
$\Rightarrow (y + \sqrt{5}) (y - 5\sqrt{5}) = 0$
$\Rightarrow y = -\sqrt{5}, 5\sqrt{5}$

While comparing the root values of x and y, we find that root values of y lies between the x's root values.

Therefore, relationship between x and y can't be determined.
Hence, option E is correct.

35.   **I.** $3x^2 - 8x - 16 = 0$
$\Rightarrow (3x + 4)(x - 4) = 0$
$\Rightarrow x = -\dfrac{4}{3}, 4$

II. $3y^2 - 19y + 28 = 0$
$\Rightarrow (3y - 7)(y - 4) = 0$
$\Rightarrow y = \dfrac{7}{3}, 4$

Hence, relationship between x and y cannot be determined.
Hence, option E is correct.

36. I. $3x^2 - 5x - 12 = 0$

⇒ $(3x + 4)(x - 3) = 0$

⇒ $x = -\dfrac{4}{3}, 3$

II. $2y^2 + 15y + 25 = 0$

⇒ $(2y + 5)(y + 5) = 0$

⇒ $y = -\dfrac{5}{2}, -5$

Hence, $x > y$

Hence, option A is correct.

37. I. $12x^2 - 4x - 5 = 0$

⇒ $12x^2 - 10x + 6x - 5 = 0$

⇒ $6x(2x + 1) - 5(2x + 1) = 0$

⇒ $(6x - 5)(2x + 1) = 0$

∴ $x = \dfrac{5}{6}$ or $\dfrac{-1}{2}$

II. $8y^2 - 4y - 4 = 0$

⇒ $8y^2 - 8y + 4y - 4 = 0$

⇒ $8y(y - 1) + 4(y - 1) = 0$

⇒ $(8y + 4)(y - 1) = 0$

∴ $y = \dfrac{-1}{2}$ or $y = 1$

So, here we can't say anything.

Hence, option E is correct.

38. We have

2x + 3y = 77................(i)
3x + 5y = 124..............(ii)

Multiplying eq. (i) by 3 and eq. (ii) by 2, we get

6x + 9y = 231 ....(iii)
6x + 10y = 246 ....(iv)

Subtracting eq. (iv) from (iii) we get
y = 17

putting value of y = 17 in (i), we get
⇒ 2x + 3 × 17 = 77
⇒ 2x = 51
∴ x = 13
Here,   x < y .
Hence, option (D) is correct.

39.   **I**. $x^2 - 4\sqrt{2}x - 4\sqrt{5}x + 16\sqrt{10} = 0$
⇒ x (x − 4√2) − 4√5 (x − 4√2) = 0
⇒ (x − 4√5) (x − 4√2) = 0
∴ x = 4√2, 4√5

II. $y^2 - 5 (\sqrt{3} + 2\sqrt{2}) y + 50\sqrt{6} = 0$
⇒ y² − 5√3y − 10√2y + 50√6 = 0
⇒ y (y − 5√3) − 10√2 (y − 5√3) = 0
⇒ (y − 10√2) (y − 5√3) = 0
∴ y = 10√2, 5√3

on comparing the root value of x and y

  x   y
4√2 < 10√2
4√2 < 5√3
4√5 < 10√2
4√5 > 5√3

Here, Either x = y or relation can't be established.

Hence, option E is correct.

40. I. $x^2 - 4\sqrt{3}x + 9 = 0$

   $x^2 - 3\sqrt{3}x - \sqrt{3}x + 9 = 0$

   $x(x - 3\sqrt{3}) - \sqrt{3}(x - 3\sqrt{3}) = 0$

   $(x - 3\sqrt{3})(x - \sqrt{3}) = 0$

   $x = \sqrt{3}, 3\sqrt{3}$

   II. $y^2 - \sqrt{3}y - 18 = 0$

   $y^2 + 2\sqrt{3}y - 3\sqrt{3}y - 18 = 0$

   $y(y + 2\sqrt{3}) - 3\sqrt{3}(y + 2\sqrt{3}) = 0$

   $(y + 2\sqrt{2})(y - 3\sqrt{3}) = 0$

   $y = -2\sqrt{3}, 3\sqrt{3}$

   For x = 3√3, and y = 3√3   x = y

   For x = 3√3, and y = −2√3 x > y

   For x = √3, and y = −2√3 x > y

   For x = √3, and y = 3√3 x < y

   Therefore, relationship can't be established

   Hence, option E is correct.

41. I. $x^2 - 9x + 20 = 0$

   $x^2 - 5x - 4x + 20 = 0$

   $x(x - 5) - 4(x - 5) = 0$

   $(x - 5)(x - 4) = 0$

   $x = 5, 4$

   II. $2y^2 - 15y + 28 = 0$

   $2y^2 - 8y - 7y + 28 = 0$

   $2y(y - 4) - 7(y - 4) = 0$

   $(y - 4)(2y - 7) = 0$

   $y = 4, \dfrac{7}{2}$

   For x = 5, and y = 4, $\dfrac{7}{2}$ x > y

   For x = 4, and y = 4 x = y

   For x = 4, and y = 3.5 x > y

   Therefore, x ≥ y

   Hence, option C is correct.

42.   I. $x^2 - x - 20 = 0$
$x^2 - 5x + 4x - 20 = 0$
$x(x - 5) + 4(x - 5) = 0$
$(x - 5)(x + 4) = 0$
$x = 5, -4$

II. $y^2 + y - 30 = 0$
$y^2 + 6y - 5y - 30 = 0$
$y(y + 6) - 5(y + 6) = 0$
$(y - 5)(y + 6) = 0$
$y = -6, 5$
For x = 5, and y = 5, −6,   x ≥ y
For x = −4, and y = −6,   x > y
For x = −4, and y = 5, x < y

Therefore, relationship can't be established
Hence, option E is correct.

43.   I. $x^2 - 9x + 18 = 0$
$x^2 - 6x - 3x + 18 = 0$
$x(x - 6) - 3(x - 6) = 0$
$(x - 6)(x - 3) = 0$
$x = 3, 6$

II : $y^2 - 9\sqrt{2}y + 36 = 0$
$y^2 - 3\sqrt{2}y - 6\sqrt{2}y + 36 = 0$
$y(y - 3\sqrt{2}) - 6\sqrt{2}(y - 3\sqrt{2}) = 0$
$(y - 6\sqrt{2})(y - 3\sqrt{2}) = 0$
$y = 6\sqrt{2}, 3\sqrt{2}$

For x = 3 and y = 6√2 or 3√2   x < y
For x = 6 and y = 6√2   x < y
For x = 6 and y = 3√2   x > y

Therefore, relationship can't be established

Hence, option E is correct.

44. **I:** $x^3 - 9 = 0$
$x = 3, -3$

II: $2y^2 + 13y + 21 = 0$
$2y^2 + 7y + 6y + 21 = 0$
$y(2y + 7) + 3(2y + 7) = 0$
$(y + 3)(2y + 7) = 0$
$y = -3, -\dfrac{7}{2} = -3.5$

For x = –3 and y = –3, x = y
For x = –3 and y = –3.5 x > y
For x = 3, and y = –3 or –3.5 x > y

Therefore, x ≥ y

Hence, option C is correct.

45. **I.** $5x^2 + 11x - 12 = 0$
$\Rightarrow 5x^2 + 15x - 4x - 12 = 0$
$\Rightarrow 5x (x + 3) - 4(x + 3) = 0$
$\Rightarrow (5x - 4)(x + 3) = 0$
$\Rightarrow x = \dfrac{4}{5}, -3$

II. $4y^2 - 13y - 12 = 0$
$\Rightarrow 4y^2 - 16y + 3y - 12 = 0$
$\Rightarrow 4y(y - 4) + 3(y - 4) = 0$
$\Rightarrow (4y + 3)(y - 4) = 0$

$\Rightarrow y = -\dfrac{3}{4}, 4$

While comparing the root values of x and y, we find that one root value of y lies between the root values of x.

Therefore, relationship between x and y can't be determined.
Hence, option E is correct.

46. I. $x^2 + 16x + 63 = 0$

$x^2 + 9x + 7x + 63 = 0$

$x(x + 9) + 7(x + 9) = 0$

$(x + 7)(x + 9) = 0$

$x = -7, -9$

II. $y^2 + 13y + 42 = 0$

$y^2 + 7y + 6y + 42 = 0$

$y(y + 7) + 6(y + 7) = 0$

$(y + 7)(y + 6) = 0$

$y = -7, -6$

For x = − 7, and y = − 7,   x = y

For x = − 7, or − 9 and y = − 6   x < y

For x = − 9 and y = − 6   x < y

Therefore, x ≤ y

Hence, option B is correct.

47. I. $2x^2 + 3x - 20 = 0$

$2x^2 + 8x - 5x - 20 = 0$

$2x(x + 4) - 5(x + 4) = 0$

$(2x - 5)(x + 4) = 0$

$x = 2.5, -4$

II. $2y^2 + 15y + 28 = 0$

$2y^2 + 8y + 7y + 28 = 0$

$2y(y + 4) + 7(y + 4) = 0$

$(2y + 7)(y + 4) = 0$

$y = -3.5, -4$

For x = − 4 and y = − 4, x = y

For x = 2.5, and y = − 3.5 or − 4

x > y

For x = − 4, and y = − 3.5

x < y

Therefore, relationship can't be established

Hence, option E is correct.

48. **I.** $x^2 - 13.5x + 38 = 0$
$x^2 - 9.5x - 4x + 38 = 0$
$x(x - 9.5) - 4(x - 9.5) = 0$
$(x - 9.5)(x - 4) = 0$
$x = 9.5, 4$

II. $y^2 - 1.5y - 10 = 0$
$y^2 - 4y + 2.5y - 10 = 0$
$y(y - 4) + 2.5(y - 4) = 0$
$(y - 4)(y + 2.5) = 0$
$y = 4, -2.5$

For x = 9.5   x > y
For x = 4, and y = 4, x = y

Therefore, x ≥ y

Hence, option C is correct.

49. **I.** $x^2 + 11x + 30 = 0$
$x^2 + 5x + 6x + 30 = 0$
$x(x + 5) + 6(x + 5) = 0$
$(x + 6)(x + 5) = 0$
$x = -6, -5$

II. $y^2 + y - 20 = 0$
$y^2 + 5y - 4y - 20 = 0$
$y(y + 5) - 4(y + 5) = 0$
$(y - 4)(y + 5) = 0$
$y = -5, 4$

For x = -5 and y = -5, x = y

For x = -6, y = -5 or 4 , x < y

Therefore, x ≤ y

Hence, option B is correct.

50. **I.** $4x^2 - 216 = 0$

$x^2 = 54$

$x = \pm 3 \times 6^{1/2}$

II. $5y^3 - 810\sqrt{6} = 0$

$y^3 = 162\sqrt{6}$ $= 3\sqrt{6} \times 3\sqrt{6} \times 3 \times \sqrt{6}$

$y = 3\sqrt{6}$

Hence, option B is correct.