

## Quadratic Equation Questions for IBPS RRB Scale I Pre, IBPS PO Pre, SBI PO Pre, IBPS Clerk Mains and SBI Clerk Mains.

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.  $\frac{1}{\sqrt{x}} + \frac{1}{\sqrt{x}} = 7\sqrt{x}$

II.  $2y^2 - 11y + 12 = 0$

- A. if  $x > y$   
D. if  $x < y$

- B. if  $x \leq y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- C. if  $x \geq y$

2. I.  $143x^2 + 43x - 66 = 0$

II.  $33y^2 - 40y + 12 = 0$

- A. if  $x = y$  or relationship between  $x$  and  $y$  can't be established  
C. if  $x \leq y$

- D. if  $x \geq y$

- B. if  $x < y$   
E. if  $x > y$

3. I.  $72x^2 - 101x + 35 = 0$

II.  $45y^2 - 62y + 21 = 0$

- A. if  $x > y$   
D. if  $x \geq y$

- B. if  $x \leq y$   
E. if  $x < y$

- C. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

4. I.  $22x^2 + 6\sqrt{x} - 8 = 0$

II.  $3y^2 + 14y - 5 = 0$

- A. if  $x = y$  or relationship between  $x$  and  $y$  can't be established  
C. if  $x \leq y$

- D. if  $x < y$

- B. if  $x > y$   
E. if  $x \geq y$

5. I.  $56x^2 + 15x - 56 = 0$

II.  $7y^2 - 34y - 48 = 0$

- A. if  $x < y$   
C. if  $x > y$

- B. if  $x = y$  or relationship between  $x$  and  $y$  can't be established  
D. if  $x \geq y$

- E. if  $x \leq y$

6. I.  $45x^2 + 17\sqrt{x} + 24 = 0$  II.  $y^2 + 7y + 12 = 0$

- A. if  $x > y$   
D. if  $x < y$

- B. if  $x \leq y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- C. if  $x \geq y$

7. I.  $\frac{1}{\sqrt{x}} + \frac{1}{\sqrt{x}} = 5\sqrt{x}$

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

- A. if  $x > y$   
D. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- B. if  $x < y$

- C. if  $x \leq y$   
E. if  $x \geq y$

8. I.  $117x^2 + 128x + 35 = 0$

II.  $39y^2 - 31y - 28 = 0$

- A. if  $x > y$   
D. if  $x < y$

- B. if  $x \leq y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established  
C. if  $x \geq y$

9. I.  $36x^2 + 55x + 21 = 0$

II.  $132y^2 - 17y - 30 = 0$

- A. if  $x > y$   
D. if  $x \geq y$

- B. if  $x \leq y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established  
C. if  $x < y$

10. I.  $12x^2 - 29x + 15 = 0$

II.  $54y^2 - 20\sqrt{18} + 33 = 0$

- A. if  $x > y$   
D. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- B. if  $x \leq y$   
E. if  $x < y$   
C. if  $x \geq y$

11. I.  $x^5 - 41x^3 + 400x = 0$

II.  $y^2 - 14y + 30 = -18$

- A. if  $x > y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- B. if  $x < y$   
C. if  $x \geq y$   
D. if  $x \leq y$

12. I.  $x^2 - 3 = 2x$

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

- A. if  $x > y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- B. if  $x < y$   
C. if  $x \geq y$   
D. if  $x \leq y$

13. I.  $4x^3 + 24x^2 - 64x = 0$

II.  $3y^2 + 39y + 126 = 0$

- A. if  $x > y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- B. if  $x < y$   
C. if  $x \geq y$   
D. if  $x \leq y$

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

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

- A. if  $x > y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- B. if  $x < y$   
C. if  $x \geq y$   
D. if  $x \leq y$

15. I.  $48x^2 - 24x + 3 = 0$

II.  $55y^2 + 53y + 12 = 0$

- A. if  $x > y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

- B. if  $x < y$   
C. if  $x \geq y$   
D. if  $x \leq y$

16. I.  $45x^2 + 17\sqrt{15x} + 24 = 0$  II.  $y^2 + 7y + 12 = 0$

- A. if  $x > y$   
D. if  $x < y$

- B. if  $x \leq y$   
E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established  
C. if  $x \geq y$

17. I.  $\frac{4}{\sqrt{x}} + \frac{6}{\sqrt{x}} = 5\sqrt{x}$

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

A. if  $x > y$

B. if  $x < y$

C. if  $x \leq y$

D. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

E. if  $x \geq y$

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

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

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

19. I.  $x^2 = 361$

II.  $y^3 = 7269 + 731$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x < y$

D. if  $x \geq y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

20. I.  $x^2 + 5x + 6 = 0$

II.  $y^2 - 4y - 12 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

E. if  $x < y$

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

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

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

22. I.  $20x^2 - 108x + 144 = 0$

II.  $8y^2 + 18y + 4 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

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

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

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

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

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

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

25. I.  $2x^2 + 5x + 2 = 0$

II.  $6y^2 + 69y + 198 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

26. I.  $20x^2 + 93x + 99 = 0$

II.  $16y^2 - 25 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

27. 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  $x \geq y$

E. if  $x \leq y$  or no relationship can be established between  $x$  and  $y$ .

28. I.  $x^2 - 52x + 667 = 0$

II.  $y^2 - 60y + 899 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

29. I.  $2x + 3y = 77$

II.  $3x + 5y = 124$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

30. I.  $3x^2 - (6 + \sqrt{17})x + 2\sqrt{17} = 0$

II.  $10y^2 - (15 + 2\sqrt{17})y + 3\sqrt{17} = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

31. I.  $5x^2 + 11x - 12 = 0$

II.  $4y^2 - 13y - 12 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

32. I.  $3x^2 + 19x + 30 = 0$

II.  $3y^2 - 20y - 32 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

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

II.  $2y^2 - 8\sqrt{5}y - 50 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

34. I.  $x^2 - 52x + 667 = 0$

II.  $y^2 + 8y - 33 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

35. I.  $x^2 - 13x + 60 = 0$

II.  $y^2 + 3y - 20 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

36. I.  $10x^2 - 69x + 108 = 0$

II.  $6y^2 - 47y + 77 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

37. I.  $5x^2 - 34x + 24 = 0$

II.  $4y^2 - 13y + 9 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x \leq y$  or no relationship can be established between  $x$  and  $y$ .

38. I.  $36x^2 - 196x - 11 = 0$

II.  $4y^2 - 19y + 12 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

39. I.  $6x^2 + 25x + 21 = 0$

II.  $5y^2 - 176y - 333 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

40. I.  $x^2 = 5476$

II.  $y^3 = 405224$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

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

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

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

42. I.  $20x^2 - 108x + 144 = 0$

II.  $8y^2 + 18y + 4 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

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

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

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

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

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

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

45. I.  $2x^2 + 5x + 2 = 0$

II.  $6y^2 + 69y + 198 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

46. I.  $20x^2 + 93x + 99 = 0$

II.  $16y^2 - 25 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

47. 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  $x \geq y$

E. if  $x \leq y$  or no relationship can be established between  $x$  and  $y$ .

48. I.  $x^2 - 52x + 667 = 0$

II.  $y^2 - 60y + 899 = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

49. I.  $2x + 3y = 77$

II.  $3x + 5y = 124$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

50. I.  $3x^2 - (6 + \sqrt{17})x + 2\sqrt{17} = 0$

II.  $10y^2 - (15 + 2\sqrt{17})y + 3\sqrt{17} = 0$

A. if  $x > y$

B. if  $x \leq y$

C. if  $x \geq y$

D. if  $x < y$

E. if  $x = y$  or relationship between  $x$  and  $y$  can't be established

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Correct options:

|           |           |           |           |           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>1</b>  | <b>2</b>  | <b>3</b>  | <b>4</b>  | <b>5</b>  | <b>6</b>  | <b>7</b>  | <b>8</b>  | <b>9</b>  | <b>10</b> |
| A         | C         | C         | A         | B         | A         | D         | B         | C         | D         |
|           |           |           |           |           |           |           |           |           |           |
| <b>11</b> | <b>12</b> | <b>13</b> | <b>14</b> | <b>15</b> | <b>16</b> | <b>17</b> | <b>18</b> | <b>19</b> | <b>20</b> |
| B         | A         | E         | C         | A         | A         | D         | B         | A         | B         |
|           |           |           |           |           |           |           |           |           |           |
| <b>21</b> | <b>22</b> | <b>23</b> | <b>24</b> | <b>25</b> | <b>26</b> | <b>27</b> | <b>28</b> | <b>29</b> | <b>30</b> |
| A         | A         | E         | A         | A         | D         | E         | B         | D         | E         |
|           |           |           |           |           |           |           |           |           |           |
| <b>31</b> | <b>32</b> | <b>33</b> | <b>34</b> | <b>35</b> | <b>36</b> | <b>37</b> | <b>38</b> | <b>39</b> | <b>40</b> |
| E         | D         | E         | A         | A         | E         | E         | E         | E         | B         |
|           |           |           |           |           |           |           |           |           |           |
| <b>41</b> | <b>42</b> | <b>43</b> | <b>44</b> | <b>45</b> | <b>46</b> | <b>47</b> | <b>48</b> | <b>49</b> | <b>50</b> |
| A         | A         | E         | A         | A         | D         | E         | B         | D         | E         |



# Smartkeeda

The Question Bank

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## Explanations:

1. I.  $\frac{21}{\sqrt{x}} + \frac{11}{\sqrt{x}} = 7\sqrt{x}$

$$\frac{21+11}{\sqrt{x}} = 7\sqrt{x}$$

$$\frac{32}{\sqrt{x}} = 7\sqrt{x}$$

$$x = \frac{32}{7}$$

II.  $2y^2 - 11y + 12 = 0$

$$2y^2 - 8y - 3y + 12 = 0$$

$$2y(y-4) - 3(y-4) = 0$$

$$(2y-3)(y-4) = 0$$

$$y = \frac{3}{2}, 4$$

$$x > y$$

Hence, option A is correct.

2. I.  $143x^2 + 43x - 66 = 0$

$$\text{or, } 143x^2 + (121 - 78)x - 66 = 0$$

$$\text{or, } 143x^2 + 121x - 78x - 66 = 0$$

$$\text{or, } 11x(13x + 11) - 6(13x + 11) = 0$$

$$\text{or, } (13x + 11)(11x - 6) = 0$$

$$x = \frac{6}{11}, -\frac{11}{13}$$

II.  $33y^2 - 40y + 12 = 0$

$$\text{or, } 33y^2 - (22 + 18)y + 12 = 0$$

$$\text{or, } 33y^2 - 22y - 18y + 12 = 0$$

$$\text{or, } 11y(3y - 2) - 6(3y - 2) = 0$$

$$\text{or, } (11y - 6)(3y - 2) = 0$$

$$y = \frac{6}{11}, \frac{2}{3}$$

$$x \leq y$$

Hence, option C is correct.



**3.** I.  $72x^2 - 101x + 35 = 0$   
 or,  $72x^2 - (56 + 45)x + 35 = 0$   
 or,  $72x^2 - 56x - 45x + 35 = 0$   
 or,  $8x(9x - 7) - 5(9x - 7) = 0$   
 $(8x - 5)(9x - 7) = 0$   
 $x = \frac{5}{8}, \frac{7}{9}$

II.  $45y^2 - 62y + 21 = 0$   
 or,  $45y^2 - (35 + 27)y + 21 = 0$   
 or,  $45y^2 - 35y - 27y + 21 = 0$   
 or,  $5y(9y - 7) - 3(9y - 7) = 0$   
 $(5y - 3)(9y - 7) = 0$   
 $y = \frac{3}{5}, \frac{7}{9}$

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

**4.** I.  $22x^2 + 6\sqrt{11}x - 8 = 0$   
 or,  $22x^2 + (8\sqrt{11} - 2\sqrt{11})x - 8 = 0$   
 or,  $22x^2 + 8\sqrt{11}x - 2\sqrt{11}x - 8 = 0$   
 or,  $2\sqrt{11}x(\sqrt{11}x + 4) - 2(\sqrt{11}x + 4) = 0$   
 $(2\sqrt{11}x - 2)(\sqrt{11}x + 4) = 0$   
 $x = \frac{1}{11}, -\frac{4}{11}$

II.  $3y^2 + 14y - 5 = 0$   
 or,  $3y^2 + (15 - 1)y - 5 = 0$   
 or,  $3y^2 + 15y - y - 5 = 0$   
 or,  $3y(y + 5) - 1(y + 5) = 0$   
 $(3y - 1)(y + 5) = 0$

$y = \frac{1}{3}, -5$

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

5. I.  $56x^2 + 15x - 56 = 0$   
 or,  $56x^2 + (64 - 49)x - 56 = 0$   
 or,  $56x^2 + 64x - 49x - 56 = 0$   
 or,  $8x(7x + 8) - 7(7x + 8) = 0$   
 $(7x + 8)(8x - 7) = 0$   
 $x = \frac{7}{8}, -\frac{8}{7}$

II.  $7y^2 - 34y - 48 = 0$   
 or,  $7y^2 - (42 - 8)y - 48 = 0$   
 or,  $7y^2 - 42y + 8y - 48 = 0$   
 or,  $7y(y - 6) + 8(y - 6) = 0$   
 $(7y + 8)(y - 6) = 0$

$y = -\frac{8}{7}, 6$

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

Hence, option B is correct.

6. I.  $45x^2 + 17\sqrt{15x} + 24 = 0$   
 $45x^2 + 9\sqrt{15x} + 8\sqrt{15x} + 24 = 0$   
 $3\sqrt{15x}(\sqrt{15x} + 3) + 8(\sqrt{15x} + 3) = 0$   
 $(\sqrt{15x} + 3)(3\sqrt{15x} + 8) = 0$   
 $x = -\frac{3}{\sqrt{15}}, -\frac{8}{3\sqrt{15}}$

II.  $y^2 + 7y + 12 = 0$   
 $y^2 + 4y + 3y + 12 = 0$   
 $y(y + 4) + 3(y + 4) = 0$   
 $(y + 4)(y + 3) = 0$   
 $y = -4, -3$

$x > y$

Hence, option A is correct.

7. I.  $\frac{4}{\sqrt{x}} + \frac{6}{\sqrt{x}} = 5\sqrt{x}$   
 or,  $\frac{4+6}{\sqrt{x}} = 5\sqrt{x}$

$10 = 5x$   
 $x = 2$

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.

8. I.  $117x^2 + 128x + 35 = 0$   
 $117x^2 + 65x + 63x + 35 = 0$   
 $13x(9x + 5) + 7(9x + 5) = 0$   
 $(13x + 7)(9x + 5) = 0$   
 $x = -\frac{7}{13}, -\frac{5}{9}$

II.  $39y^2 - 31y - 28 = 0$   
 $39y^2 - 52y + 21y - 28 = 0$   
 $13y(3y - 4) + 7(3y - 4) = 0$   
 $(3y - 4)(13y + 7) = 0$

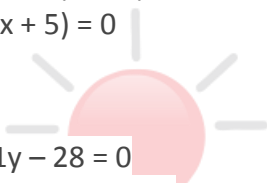
$y = \frac{4}{3}, -\frac{7}{13}$

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

9. I.  $36x^2 + 55x + 21 = 0$   
 $36x^2 + 28x + 27x + 21 = 0$   
 $4x(9x + 7) + 3(9x + 7) = 0$   
 $(9x + 7)(4x + 3) = 0$   
 $x = -\frac{7}{9}, -\frac{3}{4}$

II.  $132y^2 - 17y - 30 = 0$   
 $132y^2 - 72y + 55y - 30 = 0$   
 $12y(11y - 6) + 5(11y - 6) = 0$   
 $(11y - 6)(12y + 5) = 0$   
 $y = \frac{6}{11}, -\frac{5}{12}$

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



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**10.** I.  $12x^2 - 29x + 15 = 0$   
 $12x^2 - 20x - 9x + 15 = 0$   
 $4x(3x - 5) - 3(3x - 5) = 0$   
 $(3x - 5)(4x - 3) = 0$   
 $x = \frac{5}{3}, \frac{3}{4}$

II.  $54y^2 - 20\sqrt{18y} + 33 = 0$   
 $54y^2 - 11\sqrt{18y} - 9\sqrt{18y} + 33 = 0$   
 $\sqrt{18y}(3\sqrt{18y} - 11) - 3(3\sqrt{18y} - 11) = 0$   
 $(\sqrt{18y} - 3)(3\sqrt{18y} - 11) = 0$   
 $y = \frac{3}{18} = \frac{1}{\sqrt{2}}, \frac{11}{3\sqrt{18}} = \frac{11}{9\sqrt{2}}$

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

Hence, option D is correct.

**11.** I.  $x^5 - 41x^3 + 400x = 0$   
 $\therefore x(x^4 - 41x^2 + 400) = 0$   
 $\therefore x = 0$  or  $x^4 - 41x^2 + 400 = 0$   
Let  $x^2 = a$   
 $\therefore a^2 - 41a + 400 = 0$   
 $\therefore a^2 - 25a - 16a + 400 = 0$   
 $\therefore (a - 16)(a - 25) = 0$   
 $\therefore a = 16$  or  $a = 25$   
 $\therefore x^2 = 16$  or  $x^2 = 25$   
 $\therefore x = \pm 4$  or  $x = \pm 5$   
 $\therefore x = -5$  or  $-4$  or  $0$  or  $4$  or  $5$

II.  $y^2 - 14y + 30 = -18$   
 $\therefore y^2 - 14y + 48 = 0$   
 $\therefore y^2 - 8y - 6y + 48 = 0$   
 $\therefore (y - 6)(y - 8) = 0$   
 $\therefore y = 6$  or  $y = 8$

For both values of y,  $x < y$

Hence, option B is correct.

**12.** I.  $x^2 - 3 = 2x$   
 $\therefore x^2 - 2x - 3 = 0$   
 $\therefore x^2 - 3x + x - 3 = 0$   
 $\therefore (x + 1)(x - 3) = 0$   
 $\therefore x = 3$  or  $x = -1$

II.  $y^2 + 5y + 6 = 0$   
 $\therefore y^2 + 3y + 2y + 6 = 0$   
 $\therefore (y + 3)(y + 2) = 0$   
 $\therefore y = -3$  or  $y = -2$

For both values of  $x$ ,  $x > y$   
Hence, option A is correct

**13.** I.  $4x^3 + 24x^2 - 64x = 0$   
 $\therefore 4x(x^2 + 6x - 16) = 0$   
 $\therefore 4x = 0$  or  $x^2 + 6x - 16 = 0$  (Here  $4x = 0$  is nothing but  $x = 0$ )  
 $\therefore x^2 + 6x - 16 = 0$   
 $\therefore x^2 + 8x - 2x - 16 = 0 \therefore (x - 2)(x + 8) = 0$   
 $\therefore x = 2$  or  $x = -8 \therefore x = -8, 0$  or  $2$

II.  $3y^2 + 39y + 126 = 0$   
 $\therefore y^2 + 13y + 42 = 0$   
 $\therefore y^2 + 7y + 6y + 42 = 0 \therefore (y + 7)(y + 6) = 0$   
 $\therefore y = -7$  or  $y = -6$  When  $x = -8$ ,  $x < y$

When  $x = 0$  or  $2$ ,  $x > y$

Hence, no relation can be established between  $x$  and  $y$ .  
Hence, option E is correct.

**14.** I.  $x^2 - 25x + 114 = 0$   
 $\therefore x^2 - 19x - 6x + 114 = 0$   
 $\therefore (x - 6)(x - 19) = 0$   
 $\therefore x = 19$  or  $x = 6$

II.  $y^2 - 10y + 24 = 0$   
 $\therefore y^2 - 6y - 4y + 24 = 0$   
 $\therefore (y - 4)(y - 6) = 0$   
 $\therefore y = 6$  or  $y = 4$

When  $x = 19$ ,  $x > y$

When  $x = 6$ ,  $x \geq y$

Hence,  $x \geq y$

Hence, option C is correct.

- 15.**  $48x^2 - 24x + 3 = 0$  is of the form  $ax^2 - bx + c = 0$   
 Both roots of this equation are positive i.e.  $x > 0$   
 $55y^2 + 53y + 12 = 0$  is of the form  $ay^2 + by + c = 0$   
 Both roots of this equation are negative i.e.  $y < 0$   
 Hence,  $x > y$   
 Hence, option A is correct.

**16.** I.  $45x^2 + 17\sqrt{15x} + 24 = 0$   
 $45x^2 + 9\sqrt{15x} + 8\sqrt{15x} + 24 = 0$   
 $3\sqrt{15x}(\sqrt{15x} + 3) + 8(\sqrt{15x} + 3) = 0$   
 $(\sqrt{15x} + 3)(3\sqrt{15x} + 8) = 0$   
 $x = -3/\sqrt{15}, -8/3\sqrt{15}$

II.  $y^2 + 7y + 12 = 0$   
 $y^2 + 4y + 3y + 12 = 0$   
 $y(y + 4) + 3(y + 4) = 0$   
 $(y + 4)(y + 3) = 0$   
 $y = -4, -3$

$x > y$

Hence, option A is correct.

**17.** I.  $\frac{4}{\sqrt{x}} + \frac{6}{\sqrt{x}} = 5\sqrt{x}$   
 or,  $\frac{4+6}{\sqrt{x}} = 5\sqrt{x}$   
 $10 = 5x$   
 $x = 2$

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.

**18.** I.  $x^2 - 7\sqrt{3}x + 36 = 0$   
 $\Rightarrow x^2 - 4\sqrt{3}x - 3\sqrt{3}x + 36 = 0$   
 $\Rightarrow x(x - 4\sqrt{3}) - 3\sqrt{3}(x - 4\sqrt{3}) = 0$   
 $\Rightarrow (x - 3\sqrt{3})(x - 4\sqrt{3}) = 0$   
 $\therefore x = 3\sqrt{3}, 4\sqrt{3}$

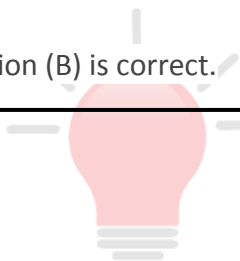
II.  $y^2 - 11\sqrt{3}y + 84 = 0$   
 $\Rightarrow y^2 - 4\sqrt{3}y - 7\sqrt{3}y + 84 = 0$   
 $\Rightarrow y(y - 4\sqrt{3}) - 7\sqrt{3}(y - 4\sqrt{3}) = 0$   
 $\Rightarrow (y - 7\sqrt{3})(y - 4\sqrt{3}) = 0$   
 $\therefore y = 7\sqrt{3}, 4\sqrt{3}$

Now, While comparing the root values of x and y

|                         |   |
|-------------------------|---|
| x                       | y |
| $3\sqrt{3} < 4\sqrt{3}$ |   |
| $3\sqrt{3} < 7\sqrt{3}$ |   |
| $4\sqrt{3} = 4\sqrt{3}$ |   |
| $4\sqrt{3} < 7\sqrt{3}$ |   |

Here,  $x \leq y$

Hence, option (B) is correct.



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

II.  $y^3 = 7269 + 731$   
 $y^3 = 8000$   
 $y = 20$   
 $x < y$   
Hence, option A is correct.

**20.** 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

$$\begin{aligned}x & y \\ -2 & = -2 \\ -2 & < +6 \\ -3 & < -2 \\ -3 & < +6\end{aligned}$$

Here,  $x \leq y$

Hence, option (B) is correct.

**21.** I.  $25x^2 - 90x + 72 = 0$   
 $\Rightarrow (5x - 6)(5x - 12) = 0$   
 $\Rightarrow x = \frac{6}{5}, \frac{12}{5}$

II.  $y^2 + 26y + 168 = 0$   
 $\Rightarrow (y + 12)(y + 14) = 0$   
 $\Rightarrow y = -12, -14$

Hence,  $x > Y$

Hence, option A is correct.

**22.** I.  $20x^2 - 108x + 144 = 0$   
 $\Rightarrow 4(5x^2 - 27x + 36) = 0$   
 $\Rightarrow 5x^2 - 27x + 36 = 0$   
 $\Rightarrow (5x - 12)(x - 3) = 0$   
 $\Rightarrow x = \frac{12}{5}, 3$

II.  $8y^2 + 18y + 4 = 0$   
 $\Rightarrow (8y + 2)(y + 2) = 0$   
 $\Rightarrow y = -\frac{1}{4}, -2$

Hence,  $x > Y$

Hence, option A is correct.



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

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

Hence, relationship between x and y cannot be determined.

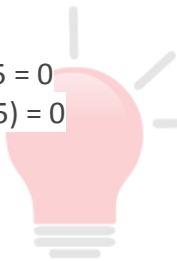
Hence, option E is correct.

**24.** I.  $3x^2 - 5x - 12 = 0$   
 $\Rightarrow (3x + 4)(x - 3) = 0$   
 $\Rightarrow x = -\frac{4}{3}, 3$

II.  $2y^2 + 15y + 25 = 0$   
 $\Rightarrow (2y + 5)(y + 5) = 0$   
 $\Rightarrow y = -\frac{5}{2}, -5$

Hence,  $x > y$

Hence, option A is correct.



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**25.** I.  $2x^2 + 5x + 2 = 0$   
 $\Rightarrow (2x + 1)(x + 2) = 0$   
 $\Rightarrow x = -\frac{1}{2}, -2$

II.  $6y^2 + 69y + 198 = 0$   
 $\Rightarrow 3(2y^2 + 23y + 66) = 0$   
 $\Rightarrow 2y^2 + 23y + 66 = 0$   
 $\Rightarrow (2y + 11)(y + 6) = 0$   
 $\Rightarrow y = -\frac{11}{2}, -6$

Hence,  $x > y$

Hence, option A is correct.

**26.** I.  $20x^2 + 93x + 99 = 0$   
 $\Rightarrow 20x^2 + 60x + 33x + 99 = 0$   
 $\Rightarrow 20x(x + 3) + 33(x + 3) = 0$   
 $\Rightarrow (x + 3)(20x + 33) = 0$   
 $\therefore x = -3$  or  $x = -\frac{33}{20}$

II.  $16y^2 - 25 = 0$   
 $\Rightarrow 16y^2 + 20y - 20y - 25 = 0$   
 $\Rightarrow 4y(4y + 5) - 5(4y + 5) = 0$   
 $\Rightarrow (4y - 5)(4y + 5) = 0$   
 $\therefore y = \frac{5}{4}$  or  $y = -\frac{5}{4}$

So, we can say that  $x < y$ .

Hence, option D is correct.

**27.** I.  $12x^2 - 4x - 5 = 0$   
 $\Rightarrow 12x^2 - 10x + 6x - 5 = 0$   
 $\Rightarrow 6x(2x + 1) - 5(2x + 1) = 0$   
 $\Rightarrow (6x - 5)(2x + 1) = 0$

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

II.  $8y^2 - 4y - 4 = 0$   
 $\Rightarrow 8y^2 - 8y + 4y - 4 = 0$   
 $\Rightarrow 8y(y - 1) + 4(y - 1) = 0$   
 $\Rightarrow (8y + 4)(y - 1) = 0$

$$\therefore y = \frac{-1}{2} \text{ or } y = 1$$

So, here we can't say anything.

Hence, option E is correct.

**28. From I :**

$$\Rightarrow x^2 - 52x + 667 = 0$$

$$\Rightarrow x^2 - 23x - 29x + 667 = 0$$

$$\Rightarrow x(x - 23) - 29(x - 23) = 0$$

$$\Rightarrow (x - 29)(x - 23) = 0$$

$$\therefore x = 29, 23$$

**From II :**

$$\Rightarrow y^2 - 60y + 899 = 0$$

$$\Rightarrow y^2 - 29y - 31y + 899 = 0$$

$$\Rightarrow y(y - 29) - 31(y - 29) = 0$$

$$\Rightarrow (y - 31)(y - 29) = 0$$

$$\therefore y = 29, 31$$

Now,

$$x \quad y$$

$$29 = 29$$

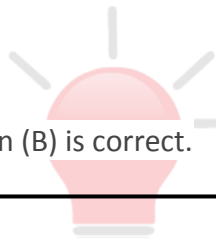
$$29 < 31$$

$$23 < 29$$

$$23 < 31$$

Here,  $x \leq y$ .

Hence, option (B) is correct.



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**29. We have**

$$2x + 3y = 77 \dots\dots\dots(i)$$

$$3x + 5y = 124 \dots\dots\dots(ii)$$

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

$$6x + 9y = 231 \dots\dots\dots(iii)$$

$$6x + 10y = 246 \dots\dots\dots(iv)$$

Subtracting eq. (iv) from (iii) we get

$$y = 17$$

putting value of  $y = 17$  in (i), we get

$$\Rightarrow 2x + 3 \times 17 = 77$$

$$\Rightarrow 2x = 51$$

$$\therefore x = 13$$

Here,  $x < y$ .

Hence, option (D) is correct.

**30.** I.  $3x^2 - (6 + \sqrt{17})x + 2\sqrt{17} = 0$   
 $\Rightarrow 3x^2 - 6x - \sqrt{17}x + 2\sqrt{17} = 0$   
 $\Rightarrow 3x(x - 2) - \sqrt{17}(x - 2) = 0$   
 $\Rightarrow (3x - \sqrt{17})(x - 2) = 0$   
 $\Rightarrow x = \frac{\sqrt{17}}{3}, 2$

II.  $10y^2 - (15 + 2\sqrt{17})y + 3\sqrt{17} = 0$   
 $\Rightarrow 10y^2 - 15y - 2\sqrt{17}y + 3\sqrt{17} = 0$   
 $\Rightarrow 5y(2y - 3) - \sqrt{17}(2y - 3) = 0$   
 $\Rightarrow (5y - \sqrt{17})(2y - 3) = 0$   
 $\Rightarrow y = \frac{\sqrt{17}}{5}, \frac{3}{2}$

On comparing values of x and y

$$\frac{\sqrt{17}}{3} > \frac{\sqrt{17}}{5}$$

$$\frac{\sqrt{17}}{3} < \frac{3}{2}$$

$$2 > \frac{\sqrt{17}}{5}$$

$$2 > \frac{3}{2}$$



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Hence, option (E) is correct.

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

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

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.

**32.** I.  $3x^2 + 19x + 30 = 0$   
 $\Rightarrow 3x^2 + 9x + 10x + 30 = 0$   
 $\Rightarrow 3x^2 + 9x + 10x + 30 = 0$   
 $\Rightarrow 3x(x + 3) + 10(x + 3) = 0$   
 $\Rightarrow (3x + 10)(x + 3) = 0$

$$\Rightarrow x = -\frac{10}{3}, -3$$

II.  $3y^2 - 20y - 32 = 0$   
 $\Rightarrow 3y^2 - 24y + 4y - 32 = 0$   
 $\Rightarrow 3y(y - 8) + 4(y - 8) = 0$   
 $\Rightarrow (3y + 4)(y - 8) = 0$

$$\Rightarrow y = -\frac{4}{3}, 8$$

While comparing the root values  $x$  and  $y$ , we find that root values  $x$  is less than  $y$ 's.

Therefore,  $x < y$

Hence, option D is correct.

**33.** 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.

**34. I.**  $x^2 - 52x + 667 = 0$   
 $\Rightarrow x^2 - 23x - 29x + 667 = 0$   
 $\Rightarrow x(x - 23) - 29(x - 23) = 0$   
 $\Rightarrow (x - 23)(x - 29) = 0$   
 $\Rightarrow x = 23, 29$

**II.**  $y^2 + 8y - 33 = 0$   
 $\Rightarrow y^2 - 3y + 11y - 33 = 0$   
 $\Rightarrow y(y - 3) + 11(y - 3) = 0$   
 $\Rightarrow (y - 3)(y + 11) = 0$   
 $\Rightarrow y = 3, -11$

Therefore,  $x > y$

Hence, option A is correct.

**35. I.**  $x^2 - 13\sqrt{2}x + 60 = 0$   
 $\Rightarrow x^2 - 10\sqrt{2}x - 3\sqrt{2}x + 60 = 0$   
 $\Rightarrow x(x - 10\sqrt{2}) - 3\sqrt{2}(x - 10\sqrt{2}) = 0$   
 $\Rightarrow (x - 3\sqrt{2})(x - 10\sqrt{2}) = 0$   
 $x = 3\sqrt{2}, 10\sqrt{2}$

**II.**  $y^2 + 3\sqrt{5}y - 20 = 0$   
 $\Rightarrow y^2 + 4\sqrt{5}y - \sqrt{5}y - 20 = 0$   
 $\Rightarrow y(y + 4\sqrt{5}) - \sqrt{5}(y + 4\sqrt{5}) = 0$   
 $\Rightarrow (y - \sqrt{5})(y + 4\sqrt{5}) = 0$   
 $\Rightarrow y = -4\sqrt{5}, \sqrt{5}$

While comparing the root values of  $x$  and  $y$ , we find that the  $x$ 's root values are greater than  $y$ 's.

Hence, option A is correct.

**36. I.**  $10x^2 - 69x + 108 = 0$   
 $\Rightarrow 10x^2 - 45x - 24x + 108 = 0$   
 $\Rightarrow 5x(2x - 9) - 12(2x - 9) = 0$   
 $\Rightarrow (5x - 12)(2x - 9) = 0$

$\therefore x = \frac{12}{5}, \frac{9}{2}$

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$$\begin{aligned} \text{II. } 6y^2 - 47y + 77 &= 0 \\ \Rightarrow 6y^2 - 33y - 14y + 77 &= 0 \\ \Rightarrow 3y(2y - 11) - 7(2y - 11) &= 0 \\ \Rightarrow (3y - 7)(2y - 11) &= 0 \end{aligned}$$

$$\therefore y = \frac{7}{3}, \frac{11}{2}$$

on comparing the values of x and y, we get

$$\begin{aligned} x & y \\ \frac{12}{5} & > \frac{7}{3} \\ \frac{12}{5} & < \frac{11}{2} \\ \frac{9}{2} & > \frac{7}{3} \\ \frac{9}{2} & < \frac{11}{2} \end{aligned}$$

Hence, either  $x = y$  or relationship cannot be established.

Hence, option E is correct.

**37.**

$$\begin{aligned} \text{I. } 5x^2 - 34x + 24 &= 0 \\ \Rightarrow 5x^2 - 34x + 24 &= 0 \\ \Rightarrow 5x^2 - 30x - 4x + 24 &= 0 \\ \Rightarrow 5x(x - 6) - 4(x - 6) &= 0 \\ \Rightarrow (5x - 4)(x - 6) &= 0 \end{aligned}$$

$$\Rightarrow x = \frac{4}{5}, 6$$

$$\begin{aligned} \text{II. } 4y^2 - 13y + 9 &= 0 \\ \Rightarrow 4y^2 - 4y - 9y + 9 &= 0 \\ \Rightarrow 4y(y - 1) - 9(y - 1) &= 0 \\ \Rightarrow (4y - 9)(y - 1) &= 0 \end{aligned}$$

$$\Rightarrow y = \frac{9}{4}, 1$$

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

Therefore, relationship between x and y can't be determined.

Hence, option E is correct.

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**38.** I.  $36x^2 - 196x - 11 = 0$   
 $\Rightarrow 36x^2 + 2x - 198x - 11 = 0$   
 $\Rightarrow 2x(18x + 1) - 11(18x + 1) = 0$   
 $\Rightarrow (2x - 11)(18x + 1) = 0$

$$\Rightarrow x = \frac{11}{2}, -\frac{1}{18}$$

II.  $4y^2 - 19y + 12 = 0$   
 $\Rightarrow 4y^2 - 16y - 3y + 12 = 0$   
 $\Rightarrow 4y(y - 4) - 3(y - 4) = 0$   
 $\Rightarrow (4y - 3)(y - 4) = 0$

$$\Rightarrow y = \frac{3}{4}, 4$$

While comparing the root values of x and y, we find that the root values of y lies between the x's. Therefore, relationship between x and y can't be determined.

Hence, option E is correct.

**39.** I.  $6x^2 + 25x + 21 = 0$   
 $\Rightarrow 6x^2 + 18x + 7x + 21 = 0$   
 $\Rightarrow 6x(x + 3) + 7(x + 3) = 0$   
 $\Rightarrow (x + 3)(6x + 7) = 0$

$$\Rightarrow x = -\frac{7}{6}, -3$$

II.  $5y^2 - 176y - 333 = 0$   
 $\Rightarrow 5y^2 - 185y + 9y - 333 = 0$   
 $\Rightarrow 5y(y - 37) + 9(y - 37) = 0$   
 $\Rightarrow (y - 37)(5y + 9) = 0$

$$\Rightarrow y = 37, -\frac{9}{5}$$

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

Therefore, relationship between x and y cannot be determined.

Hence, option E is correct.



**40.** I.  $x^2 = 5476$   
 $\Rightarrow x = \pm 74$

II.  $y^3 = 405224$   
 $\Rightarrow y = 74$

Hence,  $x \leq y$

Hence, option B is correct.

**41.** I.  $25x^2 - 90x + 72 = 0$   
 $\Rightarrow (5x - 6)(5y - 12) = 0$   
 $\Rightarrow x = \frac{6}{5}, \frac{12}{5}$

II.  $y^2 + 26y + 168 = 0$   
 $\Rightarrow (y + 12)(y + 14) = 0$   
 $\Rightarrow y = -12, -14$

Hence,  $x > Y$

Hence, option A is correct.

**42.** I.  $20x^2 - 108x + 144 = 0$   
 $\Rightarrow 4(5x^2 - 27x + 36) = 0$   
 $\Rightarrow 5x^2 - 27x + 36 = 0$   
 $\Rightarrow (5x - 12)(x - 3) = 0$   
 $\Rightarrow x = \frac{12}{5}, 3$

II.  $8y^2 + 18y + 4 = 0$   
 $\Rightarrow (8y + 2)(y + 2) = 0$   
 $\Rightarrow y = -\frac{1}{4}, -2$

Hence,  $x > Y$

Hence, option A is correct.

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

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

Hence, relationship between x and y cannot be determined.

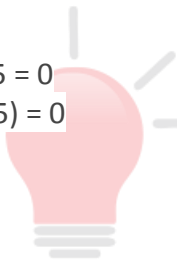
Hence, option E is correct.

**44.** I.  $3x^2 - 5x - 12 = 0$   
 $\Rightarrow (3x + 4)(x - 3) = 0$   
 $\Rightarrow x = -\frac{4}{3}, 3$

II.  $2y^2 + 15y + 25 = 0$   
 $\Rightarrow (2y + 5)(y + 5) = 0$   
 $\Rightarrow y = -\frac{5}{2}, -5$

Hence,  $x > y$

Hence, option A is correct.



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**45.** I.  $2x^2 + 5x + 2 = 0$   
 $\Rightarrow (2x + 1)(x + 2) = 0$   
 $\Rightarrow x = -\frac{1}{2}, -2$

II.  $6y^2 + 69y + 198 = 0$   
 $\Rightarrow 3(2y^2 + 23y + 66) = 0$   
 $\Rightarrow 2y^2 + 23y + 66 = 0$   
 $\Rightarrow (2y + 11)(y + 6) = 0$   
 $\Rightarrow y = -\frac{11}{2}, -6$

Hence,  $x > y$

Hence, option A is correct.

**46.** I.  $20x^2 + 93x + 99 = 0$   
 $\Rightarrow 20x^2 + 60x + 33x + 99 = 0$   
 $\Rightarrow 20x(x + 3) + 33(x + 3) = 0$   
 $\Rightarrow (x + 3)(20x + 33) = 0$

$$\therefore x = -3 \text{ or } x = -\frac{33}{20}$$

II.  $16y^2 - 25 = 0$   
 $\Rightarrow 16y^2 + 20y - 20y - 25 = 0$   
 $\Rightarrow 4y(4y + 5) - 5(4y + 5) = 0$   
 $\Rightarrow (4y - 5)(4y + 5) = 0$

$$\therefore y = \frac{5}{4} \text{ or } y = -\frac{5}{4}$$

So, we can say that  $x < y$ .

Hence, option D is correct.

**47.** I.  $12x^2 - 4x - 5 = 0$   
 $\Rightarrow 12x^2 - 10x + 6x - 5 = 0$   
 $\Rightarrow 6x(2x + 1) - 5(2x + 1) = 0$   
 $\Rightarrow (6x - 5)(2x + 1) = 0$

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

II.  $8y^2 - 4y - 4 = 0$   
 $\Rightarrow 8y^2 - 8y + 4y - 4 = 0$   
 $\Rightarrow 8y(y - 1) + 4(y - 1) = 0$   
 $\Rightarrow (8y + 4)(y - 1) = 0$

$$\therefore y = \frac{-1}{2} \text{ or } y = 1$$

So, here we can't say anything.

Hence, option E is correct.



**48. From I :**

$$\Rightarrow x^2 - 52x + 667 = 0$$

$$\Rightarrow x^2 - 23x - 29x + 667 = 0$$

$$\Rightarrow x(x - 23) - 29(x - 23) = 0$$

$$\Rightarrow (x - 29)(x - 23) = 0$$

$$\therefore x = 29, 23$$

**From II :**

$$\Rightarrow y^2 - 60y + 899 = 0$$

$$\Rightarrow y^2 - 29y - 31y + 899 = 0$$

$$\Rightarrow y(y - 29) - 31(y - 29) = 0$$

$$\Rightarrow (y - 31)(y - 29) = 0$$

$$\therefore y = 29, 31$$

Now,

$$x \quad y$$

$$29 = 29$$

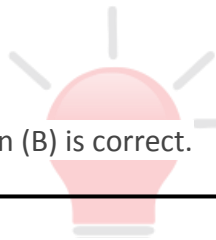
$$29 < 31$$

$$23 < 29$$

$$23 < 31$$

Here,  $x \leq y$ .

Hence, option (B) is correct.



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**49. We have**

$$2x + 3y = 77 \dots\dots\dots(i)$$

$$3x + 5y = 124 \dots\dots\dots(ii)$$

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

$$6x + 9y = 231 \dots\dots\dots(iii)$$

$$6x + 10y = 246 \dots\dots\dots(iv)$$

Subtracting eq. (iv) from (iii) we get

$$y = 17$$

putting value of  $y = 17$  in (i), we get

$$\Rightarrow 2x + 3 \times 17 = 77$$

$$\Rightarrow 2x = 51$$

$$\therefore x = 13$$

Here,  $x < y$ .

Hence, option (D) is correct.

50. I.  $3x^2 - (6 + \sqrt{17})x + 2\sqrt{17} = 0$   
 $\Rightarrow 3x^2 - 6x - \sqrt{17}x + 2\sqrt{17} = 0$   
 $\Rightarrow 3x(x - 2) - \sqrt{17}(x - 2) = 0$   
 $\Rightarrow (3x - \sqrt{17})(x - 2) = 0$   
 $\Rightarrow x = \frac{\sqrt{17}}{3}, 2$

II.  $10y^2 - (15 + 2\sqrt{17})y + 3\sqrt{17} = 0$   
 $\Rightarrow 10y^2 - 15y - 2\sqrt{17}y + 3\sqrt{17} = 0$   
 $\Rightarrow 5y(2y - 3) - \sqrt{17}(2y - 3) = 0$   
 $\Rightarrow (5y - \sqrt{17})(2y - 3) = 0$   
 $\Rightarrow y = \frac{\sqrt{17}}{5}, \frac{3}{2}$

On comparing values of x and y

$$\frac{\sqrt{17}}{3} > \frac{\sqrt{17}}{5}$$

$$\frac{\sqrt{17}}{3} < \frac{3}{2}$$

$$2 > \frac{\sqrt{17}}{5}$$

$$2 > \frac{3}{2}$$



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Hence, option (E) is correct.

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