Quadratic Equation for IBPS RRB Clerk 2020 Prelims Exam

Quadratic Equation

Directions: In the given question, two equations numbered l and II are given. You have to solve both the equations and mark the appropriate answer

1. I) $x^2 + 5x + 6 = 0$

II) $y^2 + 7y + 12 = 0$

a) x > y

b) x ≥ y

c) x < y

d) x ≤ y

e) x = y or the relationship cannot be established

2. I) $x^2 = 784$

II) $y = \sqrt{784}$

a) if x > y

b) if x ≥ y

c) if x < y

d) x ≤ y

e) x = y or the relationship cannot be established

3. I) 5x + 3y = 16

II) 3x + 2y = 34

a) x > y

b) x ≥ y

c) x < y

d) x ≤ y

e) x = y or the relationship can not be established

4. I. $x^2 + 3x - 18 = 0$

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II. $y^2 - 16 = 0$

a) x > y

b) x < y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be determined

5. I) $6x + 3y = 18$

II) $3x + 4y = 15$

a) if x < y

b) if x > y

c) if x ≤ y

d) if x ≥ y

e) x = y or if the relationship cannot be established

6. I. $x^2 + 15x - 76 = 0$

II. $y^2 + 20y - 96 = 0$

a) x < y

b) x > y

c) x = y OR the relationship cannot be determined

d) x ≥ y

e) x ≤ y

7. I. $x^2 - 7x - 98 = 0$

II. $y^2 + 16y - 57 = 0$

a) x < y

b) x > y

c) x = y OR the relationship cannot be determined

d) x ≥ y

e) x ≤ y

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

II. $y^2 - 37y + 330 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

9. I. $x^2 - 5x + 4 = 0$

II. $y^2 + 23y - 24 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

10. I. $x^2 - 27x + 180 = 0$

II. $y^2 - 5y - 84 = 0$

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

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11. I. $x^2 - 21x + 108 = 0$

II. $y^2 - 24y + 128 = 0$

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

12. I. $x^2 - 16x + 63 = 0$

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

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

13. I. $x^2 + 17x + 60 = 0$

II. $y^2 - 3y - 40 = 0$

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

14. I. $x^2 - 7x - 18 = 0$

II. $y^2 - 20y + 99 = 0$

a) x < y

b) x > y

c) x = y OR the relationship cannot be determined

d) x ≥ y

e) x ≤ y

15. I. $x^2 + 6x + 8 = 0$

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

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

16. I. $x^2 - 19x - 66 = 0$

II. $y^2 + 20y + 64 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

17. I. $x^2 - 22x + 72 = 0$

II. $y^2 - 32y + 247 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

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e) x = y or relationship cannot be established

18. I. x^2 +6x -352 = 0

II. y^2 +25y +156 = 0

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

19. I. x^2 – 24x + 128 = 0

II. y^2 + 7y – 120 = 0

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

20. I. x^2 + 28x + 195 = 0

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

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

21. I. x^2 – 6x – 160 = 0

II. y^2 – 30y + 224 = 0

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

22. I. x^2 – 26x + 165 = 0

II. y^2 – 24y + 143 = 0

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

23. I. x^2 + 2x - 15 = 0

II. y^2 - 15y + 44 = 0

a) x > y

b) x < y

c) x = y or the relationship cannot be established ×

d) x ≥ y

e) x ≤ y

24. I. x^2 - 12x + 32 = 0

II. y^2 - y - 12 = 0

a) x > y

b) x < y

c) x = y or the relationship cannot be established

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d) $x \geq y$

e) $x \leq y$

25. I. $x^2 - 12x + 27 = 0$

II. $y^2 - 3y - 18 = 0$

a) $x > y$

b) $x < y$

c) x = y or the relationship cannot be established

d) $x \geq y$

e) $x \leq y$

26. I. $x^2 - 16x + 55 = 0$

II. $y^2 - 15y + 56 = 0$

a) $x > y$

b) $x < y$

c) x = y or the relationship cannot be established

d) $x \geq y$

e) $x \leq y$

27. I. $x^2 – 20x + 96 = 0$

II. $y^2 + y – 42 = 0$

a) $x > y$

b) $x < y$

c) x = y or the relationship cannot be established

d) $x \geq y$

e) $x \leq y$

28. I. $x^2 + 13x – 198 = 0$

II. $y^2 – 11y – 102 = 0$

a) $x < y$

b) $x > y$

c) x = y OR the relationship cannot be determined

d) $x \geq y$

e) $x \leq y$

29. I. $x^2 + 7x – 8 = 0$

II. $y^2 – 21y + 108 = 0$

a) $x < y$

b) $x > y$

c) x = y OR the relationship cannot be determined

d) $x \geq y$

e) $x \leq y$

30. I. $x^2 – 19x + 84 = 0$

II. $y^2 + 14y + 45 = 0$

a) $x < y$

b) $x > y$

c) x = y OR the relationship cannot be determined

d) $x \geq y$

e) $x \leq y$

31. I. $x^2 – 8x + 12 = 0$

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

a) $x \geq y$

b) $y \geq x$

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c) Relationships cannot be established between x & y

d) x > y

e) x < y

32. $x^2 – 2x + 1 = 0$

$y^2 – 6y + 9 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship between x and y cannot be established

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

II $y^2 + 7y + 12 = 0$

a) x > y

b) x ≥ y

c) x < y

d) x ≤ y

e) x = y or the relationship can't be established.

34. I $x^2 – 8x + 15 = 0$

II $y^2 + 14y + 24 = 0$

a) x > y

b) x ≥ y

c) x < y

d) x ≤ y

e) x = y or relationship between x and y cannot be established

35. I. $x^2 – 9x – 136 = 0$

II. $y^2 + 18y – 63 = 0$

a) x < y

b) x > y

c) x = y OR the relationship cannot be determined

d) x ≥ y

e) x ≤ y

36. $x^2 – x – 6 = 0$

$y^2 + 2y – 3 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship between x and y cannot be established

37. I. $x^2 +17x +70 = 0$

II. $y^2 -7y -30 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

38. I. $a^2 - 784 = 0$

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II. b^2 - 24b = 0

a) a < b

b) a > b

c) a ≤ b

d) a ≥ b

e) a = b or the relationship cannot be determined

39. I. a = √1225

II. b^2 = 1225

a) a > b

b) a < b

c) a ≥ b

d) a ≤ b

e) a = b or relation cannot be established

40. I. a^2 - 64 = 0

II. $9b^2$ - 729 = 0

a) a < b

b) a > b

c) a ≤ b

d) a ≥ b

e) a = b or the relationship cannot be determined

41. I. x^2 -22x +120 = 0

II. y^2 -3y -130 = 0

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

42. I) x^2 – 5x + 6 = 0

II) y^4 – $5y^2$ + 6 = 0

a) x > y

b) x ≥ y

c) x < y

d) x = y or Relationship between x and y cannot be determined

e) x ≤ y

43. I. $4x^2$ – 9x + 2 = 0

II. y^2 + 29y – 62 = 0

a) x < y

b) x > y

c) x = y OR the relationship cannot be determined

d) x ≥ y

e) x ≤ y

44. I. x^2 – 17x + 60 = 0

II. y^2 – 23y + 120 = 0

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

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45. I. $x^2 - x - 56 = 0$

II. $y^2 - 15y + 56 = 0$

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

46. I. $x^2 - 88 = 273$

II. $y = \sqrt{361}$

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

47. I. $x^2 - 23x + 132 = 0$

II. $y^2 - 20y + 100 = 0$

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

48. I. $x^2 + 3x - 88 = 0$

II. $y^2 - 33y + 242 = 0$

a) x > y

b) x < y

c) x = y or the relationship cannot be established

d) x ≥ y

e) x ≤ y

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

II. $y^2 - 19y - 42 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

50. I. $x^2 + 18x + 80 = 0$

II. $y^2 + 29y + 190 = 0$

a) x < y

b) x > y

c) x ≤ y

d) x ≥ y

e) x = y or relationship cannot be established

Solution with Explanation

1. Answer: B)

Solving equation I

$x + 5x + 6 = 0$

$x + 2x + 3x + 6 = 0$

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⇒ x(x + 2) + 3(x + 2) = 0

⇒ (x + 3)(x + 2) =0

⇒ x = – 3 or – 2

Solving equation II

y + 7y + 12 = 0

y + 4y + 3y + 12 = 0

⇒ y(y + 4) + 3 (y + 4) = 0

⇒ (y + 3) (y + 4) = 0

⇒ y = – 3 or – 4

∴ x ≥ y

2. Answer: D)

As per the given data,

From I)

⇒ x^2 = 784

⇒ x = ± 28

From II)

⇒ y = √(784) = 28

∴ From the above, we can say x ≤ y

3. Answer: C)

As per the given data,

From I)

⇒ 5x + 3y = 16

Multiply 3 on both sides, we get

⇒ 15x + 9y = 48 ….equation (1)

From II)

⇒ 3x + 2y = 34

Multiply 5 on both sides, we get

⇒ 15x + 10y = 170 …equation (2)

Subtract equation (1) from equation (2), we get

⇒ -y = -122

⇒ y = 122

Substitute y = 122 in equation (1)

⇒ 15x + 9 × (122) = 48

⇒ 15x = 48 - 1098

⇒ x = -1050/15 = -70

∴ x < y

4. Answer: E)

As per the given data,

By solving x^2 + 3x - 18 = 0, we get

⇒ x^2 + 3x - 18 = 0

⇒ x^2 + 6x - 3x - 18 = 0

⇒ x(x + 6) - 3(x + 6) = 0

⇒ (x - 3)(x + 6) = 0

⇒ x = 3 and x = - 6

Also by solving y^2 - 16 = 0

⇒ y^2 - 4^2 = 0

⇒ y = ± 4

When x = 3 and y = 4, then x < y

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When x = 3 and y = - 4, then x > y

When x = - 6 and y = 4, then x < y

When x = - 6 and y = - 4, then x < y

∴ Relationship cannot be determined

5. Answer: A)

From the given data,

⇒ 6x + 3y = 18 - - - - equation (1)

Also given that 3x + 4y = 15

Multiply 2 on both sides, we get

⇒ 2 (3x + 4y = 15)

⇒ 6x + 8y = 30 - - - - equation (2)

Subtract equation (1) from equation (2), we get

⇒ 5y = 12

⇒ y = 2.4

Substitute y = 2.4 in equation (1)

⇒ 6x + 3 (2.4) = 18

⇒ 6x = 10.8

⇒ x = 1.8

∴ x < y

6. Answer: C)

I. $x^2 + 15x – 76 = 0$

⇒ $x^2 + 19x – 4x – 76 = 0$

⇒ x(x + 19) – 4(x + 19) = 0

⇒ (x + 19)(x – 4) = 0

Then, x = - 19 or x = + 4

II. $y^2 + 20y – 96 = 0$

⇒ $y^2 + 24y – 4y – 96 = 0$

⇒ y(y + 24) – 4(Y + 24) = 0

⇒ (y + 24)(y – 4) = 0

Then, y = - 24 or y = + 4

So, when x = + 4, x > y for y = - 24 and x = y for y = + 4

And when x = - 19, x > y for y = - 24 and x < y for y = + 4

∴ So, we can observe that no clear relationship cannot be determined between x and y.

7. Answer: C)

I. $x^2 – 7x – 98 = 0$

⇒ $x^2 – 14x + 7x – 98 = 0$

⇒ x(x – 14) + 7(x – 14) = 0

⇒ (x – 14)(x + 7) = 0

Then, x = +14 or x = -7

II. $y^2 + 16y – 57 = 0$

⇒ $y^2 + 19y – 3y – 57 = 0$

⇒ y(y + 19) – 3(y + 19) = 0

⇒ (y + 19)(y – 3) = 0

Then, y = -19 or y = +3

So, when x = +14, x > y for y = -19 and x > y for y = +3

And when x = - 7, x > y for y = -19 and x < y for y = +3

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∴ So, we can observe that no clear relationship cannot be determined between x and y.

8. Answer: A)

From equation I:

$x^2 - 3x - 10 = (x + 2)(x - 5) = 0$

=> x = -2, 5

From equation II:

$y^2 - 37y + 330 = (y - 22)(y - 15) = 0$

=> y = 22, 15

	X = -2	X = 5
Y = 22	x < y	x < y
Y = 15	x < y	x < y

So, x < y

9. Answer: D)

From equation I:

$x^2 - 5x + 4 = (x - 4)(x - 1) = 0$

=> x = 4, 1

From equation II:

$y^2 + 23y - 24 = (y + 24)(y - 1) = 0$

=> y = -24, 1

	X = 4	X = 1
Y = -24	x > y	x > y
Y = 1	x > y	x = y

So, x ≥ y

10. Answer: D)

From I:

$x^2 - 27x + 180 = 0$

$x^2 - 12x - 15x + 180 = 0$

$x(x - 12) - 15(x - 12) = 0$

$(x - 12)(x - 15) = 0$

x = 12, 15

From II:

$y^2 - 5y - 84 = 0$

$y^2 - 12y + 7y - 84 = 0$

$y(y - 12) + 7(y - 12) = 0$

$(y - 12)(y + 7) = 0$

y = 12, -7

X	Relation	y
12	=	12
15	>	12
12	>	-7
15	>	-7

Therefore, x ≥ y

11. Answer: C)

From I:

$x^2 - 21x + 108 = 0$

$x^2 - 12x - 9x + 108 = 0$

$x(x - 12) - 9(x - 12) = 0$

$(x - 12)(x - 9) = 0$

x = 9, 12

From II:

$y^2 - 24y + 128 = 0$

$y^2 - 16y - 8y + 128 = 0$

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$y(y - 16) - 8(y - 16) = 0$

$(y - 16)(y - 8) = 0$

$y = 8, 16$

X	Relation	y
9	>	8
9	<	16
12	>	8
12	<	16

Therefore, no relation can be established between x and y

12. Answer: A)

From I:

$x^2 - 16x + 63 = 0$

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

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

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

$x = 7, 9$

From II:

$y^2 - 2y - 24 = 0$

$y^2 - 6y + 4y - 24 = 0$

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

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

$y = 6, -4$

X	Relation	y
9	>	6
9	>	-4
7	>	6
7	>	-4

Therefore, $x > y$

13. Answer: E)

From I:

$x^2 + 17x + 60 = 0$

$x^2 + 5x + 12x + 60 = 0$

$x(x + 5) + 12(x + 5) = 0$

$(x + 5)(x + 12) = 0$

$x = -5, -12$

From II:

$y^2 - 3y - 40 = 0$

$y^2 - 8y + 5y - 40 = 0$

$y(y - 8) + 5(y - 8) = 0$

$(y - 8)(y + 5) = 0$

$y = 8, -5$

X	Relation	y
-5	<	8
-5	=	-5
-12	<	8
-12	<	-5

Therefore, $x \leq y$

14. Answer: E)

I. $x^2 - 7x - 18 = 0$

$\Rightarrow x^2 - 9x + 2x - 18 = 0$

$\Rightarrow x(x - 9) + 2(x - 9) = 0$

$\Rightarrow (x - 9)(x + 2) = 0$

Then, $x = +9$ or $x = -2$

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II. $y^2 - 20y + 99 = 0$

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

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

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

Then, y = + 11 or y = + 9

So, when x = + 9, 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

$\therefore$ So, we can clearly observe that $x \leq y$.

15. Answer: C)

From equation I:

$x^2 + 6x + 8 = (x + 2)(x + 4) = 0$

=> x = -2, -4

From equation II:

$y^2 - 3y - 10 = (y - 5)(y + 2) = 0$

=> y = 5, -2

	X = -2	X = -4
Y = 5	x < y	x < y
Y = -2	x = y	x < y

So, $x \leq y$

16. Answer: B)

From equation I:

$x^2 - 19x - 66 = (x - 22)(x + 3) = 0$

=> x = 22, -3

From equation II:

$y^2 + 20y + 64 = (y + 4)(y + 16) = 0$

=> y = -4, -16

	X = 22	X = -3
Y = -4	x > y	x > y
Y = -16	x > y	x > y

So, x > y

17. Answer: E)

From equation I:

$x^2 - 22x + 72 = (x - 18)(x - 4) = 0$

=> x = 18, 4

From equation II:

$y^2 - 32y + 247 = (y - 19)(y - 13) = 0$

=> y = 19, 13

	X = 18	X = 4
Y = 19	x < y	x < y
Y = 13	x > y	x < y

So, relationship cannot be established between x and y

18. Answer: E)

From equation I:

$x^2 + 6x - 352 = (x + 22)(x - 16) = 0$

=> x = -22, 16

From equation II:

$y^2 + 25y + 156 = (y + 13)(y + 12) = 0$

=> y = -13, -12

	X = -22	X = 16
Y = -13	x < y	x > y
Y = -12	x < y	x > y

So, relationship cannot be established between x and y

19. Answer: D)

From I:

$x^2 - 24x + 128 = 0$

$x^2 - 8x - 16x + 128 = 0$

$x(x - 8) - 16(x - 8) = 0$

$(x - 8)(x - 16) = 0$

$x = 8, 16$

From II:

$y^2 + 7y - 120 = 0$

$y^2 + 15y - 8y - 120 = 0$

$y(y + 15) - 8(y + 15) = 0$

$(y + 15)(y - 8) = 0$

$y = -15, 8$

X	Relation	Y
8	=	8
8	>	-15
16	>	8
16	>	-15

So, $x \geq y$

20. Answer: C)

From I:

$x^2 + 28x + 195 = 0$

$x^2 + 13x + 15x + 195 = 0$

$x(x + 13) + 15(x + 13) = 0$

$(x + 13)(x + 15) = 0$

$x = -13, -15$

From II:

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

$y^2 + 12y + 14y + 168 = 0$

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

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

$y = -12, -14$

X	Relation	Y
-13	<	-12
-13	>	-14
-15	<	-12
-15	<	-14

So, no relation can be established between x and y.

21. Answer: C)

From I:

$x^2 - 6x - 160 = 0$

$x^2 + 10x - 16x - 160 = 0$

$x(x + 10) - 16(x + 10) = 0$

$(x + 10)(x - 16) = 0$

$x = -10, 16$

From II:

$y^2 - 30y + 224 = 0$

$y^2 - 14y - 16y + 224 = 0$

$y(y - 14) - 16(y - 14) = 0$

$(y - 14)(y - 16) = 0$

$y = 14, 16$

X	Relation	y
-10	<	14
-10	<	16

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16	>	14
16	=	16

So, no relation can be established between x and y.

22. Answer: C)

From I:

$x^2 - 26x + 165 = 0$

$x^2 - 11x - 15x + 165 = 0$

$x(x - 11) - 15(x - 11) = 0$

$(x - 11)(x - 15) = 0$

$x = 11, 15$

From II:

$y^2 - 24y + 143 = 0$

$y^2 - 13y - 11y + 143 = 0$

$y(y - 13) - 11(y - 13) = 0$

$(y - 13)(y - 11) = 0$

$y = 11, 13$

X	Relation	y
11	=	11
11	<	13
15	>	11
15	>	13

So, no relation can be established between x and y.

23. Answer: B)

From I:

$x^2 + 2x - 15 = 0$

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

$x(x - 3) + 5(x - 3) = 0$

$(x - 3)(x + 5) = 0$

$x = 3, -5$

From II:

$y^2 - 15y + 44 = 0$

$y^2 - 4y - 11y + 44 = 0$

$y(y - 4) - 11(y - 4) = 0$

$(y - 4)(y - 11) = 0$

$y = 4, 11$

X	Relation	y
3	<	4
3	<	11
-5	<	4
-5	<	11

So, x < y

24. Answer: D)

From I:

$x^2 - 12x + 32 = 0$

$x^2 - 8x - 4x + 32 = 0$

$x(x - 8) - 4(x - 8) = 0$

$(x - 8)(x - 4) = 0$

$x = 8, 4$

From II:

$y^2 - y - 12 = 0$

$y^2 + 3y - 4y - 12 = 0$

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

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

y = -3, 4

X	Relation	y
8	>	-3
8	>	4
4	>	-3
4	=	4

So, x ≥ y

25. Answer: C)

From I:

$x^2 – 12x + 27 = 0$

$x^2 – 3x – 9x + 27 = 0$

$x(x – 3) – 9(x – 3) = 0$

$(x – 3)(x – 9) = 0$

x = 3, 9

From II:

$y^2 - 3y – 18 = 0$

$y^2 + 3y – 6y – 18 = 0$

$y(y + 3) – 6(y + 3) = 0$

$(y + 3)(y – 6) = 0$

y = -3, 6

X	Relation	y
3	>	-3
3	<	6
9	>	-3
9	>	6

So, no relationship can be established between x and y.

26. Answer: C)

From I:

$x^2 - 16x + 55 = 0$

$x^2 - 11x - 5x + 55 = 0$

$x(x - 11) - 5(x - 11) = 0$

$(x - 5)(x - 11) = 0$

x = 5, 11

From II:

$y^2 - 15y + 56 = 0$

$y^2 - 7y - 8y + 56 = 0$

$y(y - 7) - 8(y - 7) = 0$

$(y - 7)(y - 8) = 0$

y = 7, 8

X	Relation	y
5	<	7
5	<	8
11	>	7
11	>	8

So, no relationship can be established between x and y.

27. Answer: A)

From I:

$x^2 – 20x + 96 = 0$

$x^2 – 8x – 12x + 96 = 0$

$x(x – 8) – 12(x – 8) = 0$

$(x – 8)(x – 12) = 0$

x = 8, 12

From II:

$y^2 + y – 42 = 0$

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$y^2 + 7y – 6y – 42 = 0$

$y(y + 7) – 6(y + 7) = 0$

$(y + 7)(y – 6) = 0$

$y = -7, 6$

X	Relation	Y
8	>	-7
12	>	-7
8	>	6
12	>	6

So, x > y

28. Answer: C)

I. $x^2 + 13x – 198 = 0$

$\Rightarrow x^2 + 22y – 9y – 198 = 0$

$\Rightarrow x(x + 22) – 9(y + 22) = 0$

$\Rightarrow (x + 22)(x – 9) = 0$

Then, x = -22 or x = +9

II. $y^2 – 11y – 102 = 0$

$\Rightarrow y^2 – 17y + 6y – 102 = 0$

$\Rightarrow y(y – 17) + 6(y – 17) = 0$

$\Rightarrow (y – 17)(y + 6) = 0$

Then, y = + 17 or y = -6

So, when x = -22, x < y for y = + 17 and x < y for y = -6

And when x = +9, x < y for y = + 17 and x > y for y = -6

∴ So, we can observe that no clear relationship cannot be determined between x and y.

29. Answer: A)

I. $x^2 + 7x – 8 = 0$

$\Rightarrow x^2 + 8x – x – 8 = 0$

$\Rightarrow x(x + 8) – 1(x + 8) = 0$

$\Rightarrow (x + 8)(x – 1) = 0$

Then, x = - 8 or x = + 1

II. $y^2 – 21y + 108 = 0$

$\Rightarrow y^2 – 12y – 9y + 108 = 0$

$\Rightarrow y(y – 12) – 9(y – 12) = 0$

$\Rightarrow (y – 12)(y – 9) = 0$

Then, y = + 12 or y = + 9

So, when x = - 8, x < y for y = + 12 and x < y for y = + 9

And when x = + 1, x < y for y = + 12 and x < y for y = + 9

So, we can observe that x < y.

30. Answer: B)

I. $x^2 – 19x + 84 = 0$

$\Rightarrow x^2 – 12x – 7x + 84 = 0$

$\Rightarrow x(x – 12) – 7(x – 12) = 0$

$\Rightarrow (x – 12)(x – 7) = 0$

Then, x = + 12 or x = + 7

II. $y^2 + 14y + 45 = 0$

$\Rightarrow y^2 + 9y + 5y + 45 = 0$

$\Rightarrow y(y + 9) + 5(y + 9) = 0$

$\Rightarrow (y + 9)(y + 5) = 0$

Then, y = - 9 or y = - 5

So, when x = + 12, x > y for y = - 9 and x > y for y = - 5

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And when x = + 7, x > y for y = - 9 and x > y for y = - 5

∴ So, we can observe that x > y.

31. Answer: D)

I. $x^2 – 8x + 12 = 0$

⇒ $x^2 – 6x – 2x + 12 = 0$

⇒ $x(x – 6) – 2(x – 6) = 0$

⇒ $(x – 6)(x – 2) = 0$

Then, x = 6 or x = 2

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

⇒ $y^2 + 5y + y + 5 = 0$

⇒ $y(y + 5) + 1(y + 5) = 0$

⇒ $(y + 5)(y + 1) = 0$

Then, y = - 5 or y = - 1

∴ As, we can observe that both of the values of x are positive and both of the values of y are negative then we can clearly say that x > y.

32. Answer: A)

For eq 1:

$x^2 – 2x + 1 = 0$

⇒ $x^2 – x – x + 1 = 0$

⇒ $(x - 1)^2 = 0$

∴ x = 1

For eq 2:

$y^2 – 6y + 9 = 0$

⇒ $y^2 – 3y – 3y + 9 = 0$

⇒ $(y – 3)^2 = 0$

∴ y = 3

When x = 1, y = 3

∴ x and y are related as x < y

33. Answer: B)

From the given data,

⇒ $x^2 + 6x + 9 = 0$

⇒ $x^2 + 3x + 3x + 9 = 0$

⇒ $x (x + 3) + 3 (x + 3) = 0$

⇒ $(x + 3) (x + 3) = 0$

∴ x = - 3

Also given that $y^2 + 7y + 12 = 0$

⇒ $y^2 + 3y + 4y + 12 = 0$

⇒ $y (y + 3) + 4 (y + 3) = 0$

⇒ $(y + 3) (y + 4) = 0$

∴ y = - 3 and y = - 4

When x = - 3 and y = - 3, then x = y

x = - 3 and y = - 4, then x > y

∴ $x \geq y$

34. Answer: A)

From the given data,

⇒ $x^2 – 8x + 15 = 0$

⇒ $x^2 - 3x - 5x + 15 = 0$

⇒ $x(x - 3) - 5(x - 3) = 0$

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⇒ (x - 3)(x - 5) = 0

∴ x = 3 and x = 5

Also given that $y^2 + 14y + 24 = 0$

⇒ $y^2 + 12y + 2y + 24 = 0$

⇒ y(y + 12) + 2(y + 12) = 0

⇒ (y + 2)(y + 12) = 0

⇒ y = - 2 and y = - 12

∴ When x = 3 and y = - 2, then x > y

When x = 3 and y = - 12, then x > y

When x = 5 and y = - 2, then x > y

When x = 5 and y = - 12, then x > y

∴ x > y

35. Answer: C)

I. $x^2 – 9x – 136 = 0$

⇒ $x^2 – 17x + 8x – 136 = 0$

⇒ x(x – 17) + 8(x – 17) = 0

⇒ (x – 17)(x + 8) = 0

Then, x = + 17 or x = - 8

II. $y^2 + 18y – 63 = 0$

⇒ $y^2 + 21y – 3y – 63 = 0$

⇒ y(y + 21) – 3(y + 21) = 0

⇒ (y + 21)(y – 3) = 0

Then, y = - 21 or y = + 3

So, when x = + 17, x > y for y = - 21 and x > y for y = + 3

And when x = - 8, x > y for y = - 21 and x < y for y = + 3

∴ So, we can observe that no clear relationship cannot be determined between x and y.

36. Answer: E)

For eq 1:

$x^2 – x – 6 = 0$

⇒ $x^2 + 2x – 3x – 6 = 0$

⇒ (x + 2)(x – 3) = 0

∴ x = −2 or x = 3

For eq 2:

$y^2 + 2y – 3 = 0$

⇒ $y^2 + 3y– y – 3 = 0$

⇒ (y + 3)(y – 1) = 0

∴ y = −3 or y = 1

When x = −2, y = -3, then x > y

When x = −2, y = 1, then x < y

When x = 3, y = -3, then x > y

When x = 3, y = 1, then x > y

∴ No relation is obtained between x and y

37. Answer: A)

From equation I:

$x^2 +17x +70 = (x + 10)(x + 7)= 0$

=> x = -10, -7

From equation II:

$y^2 -7y -30 = (y -10)(y + 3) = 0$

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=> y = 10, -3

	X = -10	X = -7
Y = 10	x < y	x < y
Y = -3	x < y	x < y

So, x < y

38. Answer: E)

I. $a^2 - 784 = 0$

⇒ $a^2 - 28^2 = 0$

⇒ Use: $(a^2 - b^2) = (a - b)(a + b)$

⇒ $(a + 28)(a - 28) = 0$

Then, a = (-28) or a = (28)

II. $b^2 - 24b = 0$

⇒ $b(b - 24) = 0$

Then, b = (0) or a = (24)

So, when a = (-28), a < b for b = (0) and a < b for b = (24)

And when a = (28), a > b for b = (0) and a > b for b = (24)

∴ So, the relationship cannot be determined.

39. Answer: C)

I. $a = \sqrt{1225}$

⇒ $a = \sqrt{(35 \times 35)}$

⇒ a = +35

II. $b^2 = 1225$

⇒ $b^2 = (35)^2$

⇒ $b = \pm 35$

So, when a = +35, a = b for a = +35 and a > b for a = -35

∴ We can observe that $a \geq b$.

40. Answer: E)

I. $a^2 - 64 = 0$

Use: $(a^2 - b^2) = (a - b)(a + b)$

⇒ $(a + 8)(a - 8) = 0$

Then, a = 8 or a = -8

II. $9b^2 - 729 = 0$

⇒ $9(b^2 - 81) = 0$

Use: $(a^2 - b^2) = (a - b)(a + b)$

⇒ $(b^2 - 81) = 0$

⇒ $(b + 9)(b - 9) = 0$

Then, b = 9 or b = -9

So, when a = -8, a > b for b = -9 and a < b for b = 9

And when a = 8, a > b for b = -9 and a < b for b = 9

∴ So, the relationship cannot be determined.

41. Answer: E)

From equation I:

$x^2 - 22x + 120 = (x - 10)(x - 12) = 0$

=> x = 10, 12

From equation II:

$y^2 - 3y - 130 = (y - 13)(y + 10) = 0$

=> y = 13, -10

	X = 10	X = 12
Y = 13	x < y	x < y

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Y = -10	x > y	x > y

So, relationship cannot be established between x and y

42. Answer: A)

I) $x^2 - 5x + 6 = 0$

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

$\Rightarrow x = 2, 3$

II) $y^4 - 5y^2 + 6 = 0$

Let $y^2 = t$

$\Rightarrow y = \sqrt{t}$

$\Rightarrow t^2 - 5t + 6 = 0$

$\Rightarrow (t - 2)(t - 3) = 0$

$\Rightarrow t = 2, 3$

$\Rightarrow y = \pm\sqrt{2}, \pm\sqrt{3}$

$\Rightarrow$ For $x = 2$ and $y = \pm\sqrt{2}$

$\Rightarrow x > y$

$\Rightarrow$ For $x = 3$ and $y = \pm\sqrt{2}$

$\Rightarrow x > y$

$\Rightarrow$ For $x = 2$ and $y = \pm\sqrt{3}$

$\Rightarrow x > y$

$\Rightarrow$ For $x = 2$ and $y = \pm\sqrt{3}$

$\Rightarrow x > y$

$\therefore x > y$

43. Answer: C)

I. $4x^2 - 9x + 2 = 0$

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

$\Rightarrow 4x(x - 2) - 1(x - 2) = 0$

$\Rightarrow (x - 2)(4x - 1) = 0$

Then, $x = +2$ or $x = +¼$

II. $y^2 + 29y - 62 = 0$

$\Rightarrow y^2 + 31y - 2y - 62 = 0$

$\Rightarrow y(y + 31) - 2(y + 31) = 0$

$\Rightarrow (y + 31)(y - 2) = 0$

Then, $y = -31$ or $y = +2$

So, when $x = +2$, $x > y$ for $y = -31$ and $x = y$ for $y = +2$

And when $x = +1/4$, $x > y$ for $y = -31$ and $x < y$ for $y = +2$

$\therefore$ So, we can observe that no clear relationship cannot be determined between x and y.

44. Answer: C)

From I:

$x^2 - 17x + 60 = 0$

$x^2 - 12x - 5x + 60 = 0$

$x(x - 12) - 5(x - 12) = 0$

$(x - 12)(x - 5) = 0$

$x = 12, 5$

From II:

$y^2 - 23y + 120 = 0$

$y^2 - 15y - 8y + 120 = 0$

$y(y - 15) - 8(y - 15) = 0$

$(y - 15)(y - 8) = 0$

y = 8, 15

X	Relation	Y
12	>	8
12	<	15
5	<	8
5	<	15

So, the relationship cannot be established between x and y.

45. Answer: C)

From I:

$x^2 – x – 56 = 0$

$x^2 + 7x – 8x – 56 = 0$

$x(x + 7) - 8 (x + 7) = 0$

$(x + 7) (x – 8) = 0$

$x = -7, 8$

From II:

$y^2 – 15y + 56 = 0$

$y^2 – 7y – 8y + 56 = 0$

$y(y – 7) – 8(y – 7) = 0$

$(y – 8)(y – 7) = 0$

$y = 8, 7$

X	Relation	Y
-7	<	8
-7	<	7
8	=	8
8	>	7

So, the relationship cannot be established between x and y.

46. Answer: E)

From I:

$x^2 – 88 = 273$

$x^2 = 361$

$x = 19, -19$

From II:

$y = \sqrt{361}$

$y = 19$

X	Relation	Y
19	=	19
-19	<	19

So, $x \leq y$

47. Answer: A)

From I:

$x^2 – 23x + 132 = 0$

$x^2 – 12x - 11x + 132 = 0$

$x(x – 12) - 11(x – 12) = 0$

$(x – 12) (x - 11) = 0$

$x = 12, 11$

From II:

$y^2 – 20y + 100 = 0$

$y^2 – 10y – 10y + 100 = 0$

$y(y – 10) – 10(y – 10) = 0$

$(y – 10)(y – 10) = 0$

$y = 10, 10$

X	Relation	Y
12	>	10

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11	>	10

So, x > y

48. Answer: B)

From I:

$x^2 + 3x – 88 = 0$

$x^2 + 11x – 8x – 88 = 0$

$x(x + 11) – 8(x + 11) = 0$

$(x + 11)(x - 8) = 0$

$x = -11, 8$

From II:

$y^2 – 33y + 242 = 0$

$y^2 – 22y – 11y + 242 = 0$

$y(y – 22) – 11(y – 22) = 0$

$(y – 11)(y – 22) = 0$

$y = 11, 22$

X	Relation	y
-11	<	22
-11	<	11
8	<	22
8	<	11

So, x < y

49. Answer: C)

From equation I:

$x^2 +5x +6 = (x + 3)(x + 2)= 0$

$\Rightarrow x = -3, -2$

From equation II:

$y^2 -19y -42 = (y -21)(y + 2) = 0$

$\Rightarrow y = 21, -2$

	X = -3	X = -2
Y = 21	x < y	x < y
Y = -2	x < y	x = y

So, $x \leq y$

50. Answer: D)

From equation I:

$x^2 +18x +80 = (x + 8)(x + 10)= 0$

$\Rightarrow x = -8, -10$

From equation II:

$y^2 +29y +190 = (y + 10)(y + 19) = 0$

$\Rightarrow y = -10, -19$

	X = -8	X = -10
Y = -10	x > y	x = y
Y = -19	x > y	x > y

So, $x \geq y$

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