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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Quadratic Equation Questions for SBI PO Pre, IBPS PO Pre, SBI Clerk Pre and IBPS Clerk Pre, RBI Assistant, LIC Assistant Exams.

Quadratic Equation Quiz 9

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

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2. **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

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3. **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

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4. **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

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5. **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

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

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

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7. **I. $3x^2 + 19x + 30 = 0$**
II. $3y^2 – 20y – 32 = 0$

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.

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8. **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

9. **I. $x^2– 52x + 667 = 0$,**
II. $y^2 + 8y – 33 = 0$

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

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10. **I. $x^2 – 13\sqrt{2}x + 60 = 0$,**
II. $y^2 + 3\sqrt{5}y – 20 = 0$

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

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Correct Answers:

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

Explanations:

1. **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 $x = 3\sqrt{3}$, and $y = 3\sqrt{3}$ $x = y$
For $x = 3\sqrt{3}$, and $y = –2\sqrt{3}$ $x > y$
For $x = \sqrt{3}$, and $y = –2\sqrt{3}$ $x > y$
For $x = \sqrt{3}$, and $y = 3\sqrt{3}$ $x < y$
Therefore, relationship can’t be established
Hence, option E is correct.

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

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

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

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

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

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

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

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

Therefore, $x \geq y$

Hence, option C is correct.

3. **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 $y = 5, -6$, $x \geq y$

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.

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4. **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 $y = 6\sqrt{2}$ or $3\sqrt{2}$ $x < y$
For $x = 6$ and $y = 6\sqrt{2}$ $x < y$
For $x = 6$ and $y = 3\sqrt{2}$ $x > y$
Therefore, relationship can't be established
Hence, option E is correct.

5. **I:** $x^3 - 9 = 0$
$x = 3, -3$
II: $2y^2 + 13y + 21 = 0$
$2y^2 + 7y + 6y + 21 = 0$
$y(2y + 7) + 3(2y + 7) = 0$
$(y + 3)(2y + 7) = 0$
$y = -3, -\frac{7}{2} = -3.5$
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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, $x \geq y$
Hence, option C is correct.

6. **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.

7. **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.

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8. **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.

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9. **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.

10. **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.

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