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The Question Bank

Quadratic Equation Questions for SBI Clerk Mains, IBPS Clerk Mains, RBI Assistant Mains, LIC AAO, SBI PO Pre, IBPS PO Pre and RRB Scale I Pre Exams.

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.** $x = 17^2 - 13^2 - 11^2$

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

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.** $(x + 22)(x - 22) = -123$

   II. $y^2 - 43y + 462 = 0$

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

3. **I.** $8x^2 + 30x + 27 = 0$

   II. $14y^2 + 43y + 33 = 0$

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

4. **I.** $12x^2 - 13x + 3 = 0$

   II. $y^2 - (729)^{1/6} y - 4 = 0$

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

5. **I.** $x^{1/4} \times x^{3/4} \times 2401 = 49 \times x^3$

   II. $3y^2 + 17y + 10 = 0$

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

6. **I.** $8x^2 - 15x + 7 = 0$

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

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.** $3x^2 + 13x + 12 = 0$

           II. $2y^2 + 10y - 28 = 0$

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

8.   **I.** $12x^2 + 11x - 56 = 0$

           II. $4y^2 - 15y + 14 = 0$

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.** $6x^2 - 23x + 15 = 0$

           II. $10y^2 - 29y + 21 = 0$

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

10.   **I.** $2x^2 - 95x - 97 = 0$

           II. $1.5y^2 - 75.75y + 145.5 = 0$

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

Correct Answers:

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

Explanations:

1.   I. $x = 17^2 - 13^2 - 11^2$

x = 289 - 169 - 11²

x = - 1

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

⇒ (4y - 9)(y - 1) = 0

⇒ y = 1, $\dfrac{9}{4}$

Hence, x < y While comparing the root values of x and y, we find that both the root values of y are greater than x's value. Hence, x < y.

Hence, option (D) is correct.

2.   **From : I**

⇒ (x + 22) (x - 22) = - 123
⇒ x² - (22)² = - 123
⇒ x² - 484 = - 123
⇒ x² = 361
∴ x = + 19, - 19

From II

⇒ y² - 43y + 462 = 0
⇒ y² - 21y - 22y + 462 = 0
⇒ y (y - 21) - 22 (y - 21) = 0
⇒ (y - 22) (y - 21) = 0
∴ y = 21, 22

Now,
  x   y
+ 19 < 22
+ 19 < 21
- 19 < 21
- 19 < 22
Here,
x < y .
Hence, option (D) is correct.

3.   **From I :**

$\Rightarrow 8x^2 + 30x + 27 = 0$
$\Rightarrow 8x^2 + 12x + 18x + 27 = 0$
$\Rightarrow 4x (2x + 3) + 9 (2x + 3) = 0$
$\Rightarrow (4x + 9) (2x + 3) = 0$
$\therefore x = -\dfrac{9}{4}, -\dfrac{3}{2}$

From II :

$\Rightarrow 14y^2 + 43y + 33 = 0$
$\Rightarrow 14y^2 + 21y + 22y + 33 = 0$
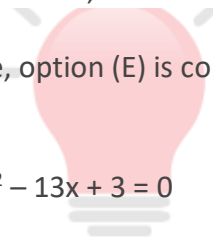$\Rightarrow 7y (2y + 3) + 11 (2y + 3) = 0$
$\Rightarrow (7y + 11) (2y + 3) = 0$
$\therefore y = -\dfrac{3}{2}, -\dfrac{11}{7}$

While comparing the root values of x and y, we find that both root values of x lies between the values of y's. Hence, relationship between x and y cannot be determined..

Hence, option (E) is correct.

4.   **I.** $12x^2 - 13x + 3 = 0$

$\Rightarrow (4x - 3)(3x - 1) = 0$

$\Rightarrow x = \dfrac{3}{4}, \dfrac{1}{3}$

II. $y^2 - (729)^{1/6} y - 4 = 0 \ y^2 - 3y - 4 = 0$

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

$y (y - 4) + 1 (y - 4) = 0$

$(y - 4) (y + 1) = 0$

$y = -1, 4$

While comparing the root values of x and y, we find that both root values of x lies between the values of y's. Hence, relationship between x and y cannot be determined.

Hence, option (E) is correct.

5. **I.** $x^{1/4} \times x^{3/4} \times 2401 = 49 \times x^3$

$x \times 2401 = 49 \times x^3$

$\dfrac{2401}{49} = x^2$

$x = \pm\, 7$

II. $3y^2 + 17y + 10 = 0$

$\Rightarrow (3y + 2)\,(y + 5) = 0$

$\Rightarrow y = -\dfrac{2}{3},\, -5$

While comparing the root values of x and y, we find that both root values of y lies between the values of x's. Hence, relationship between x and y cannot be determined.

Hence, option (E) is correct.

6. **I.** $8x^2 - 8x - 7x + 7 = 0$

or, $8x\,(x - 1) - 7\,(x - 1) = 0$

or, $(8x - 7)\,(x - 1) = 0$

$\therefore x = \dfrac{7}{8},\, 1$

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

or, $2y\,(y - 2) - 4\,(y - 2) = 0$

or, $(y - 2)\,(2y - 4) = 0$

$\therefore\ y = 2$

While comparing the root values of x and y, we find root value of y is greater than x's. Therefore, x < y.

Hence, option (D) is correct.

7. **I.** $3x^2 + 13x + 12 = 0$

or, $3x^2 + 9x + 4x + 12 = 0$

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

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

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

II. $2y^2 + 10y - 28 = 0$

or, $2y^2 + 14y - 4y - 28 = 0$

or, $2y(y + 7) - 4(y + 7) = 0$

or, $(2y - 4)(y + 7) = 0$

$y = 4/2 = 2, -7$

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

Hence, option (E) is correct.

8. **I.** $12x^2 + 11x - 56 = 0$
or, $12x^2 + 32x - 21x - 56 = 0$
or, $4x(3x + 8) - 7(3x + 8) = 0$
or, $(4x - 7)(3x + 8) = 0$
$\therefore x = \dfrac{7}{4}, \dfrac{-8}{3}$

II. $4y^2 - 15y + 14 = 0$
or, $4y^2 - 8y - 7y + 14 = 0$
or, $4y(y - 2) - 7(y - 2) = 0$
or, $(4y - 7)(y - 2) = 0$
$\therefore y = 2, \dfrac{7}{4}$

While comparing the root values of x and y, we find that one root value of x is equal to y and other one is less than y.

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

9. **I.** $6x^2 - 23x + 15 = 0$

or, $6x^2 - 18x - 5x + 15 = 0$

or, $6x(x - 3) - 5(x - 3) = 0$

or, $(6x - 5)(x - 3) = 0$

$\therefore x = 3, \dfrac{5}{6}$

II. $10y^2 - 29y + 21 = 0$

or, $10y^2 - 15y - 14y + 21 = 0$

or, $5y(2y - 3) - 7(2y - 3) = 0$

or, $(5y - 7)(2y - 3) = 0$

$\therefore y = \dfrac{7}{5}, \dfrac{3}{2}$

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

Hence, option (E) is correct.

10. **I.** $2x^2 - 95x - 97 = 0$

$\Rightarrow 2x^2 + 2x - 97x - 97 = 0$

$\Rightarrow 2x(x + 1) - 97(x + 1) = 0$

$\Rightarrow (x + 1)(2x - 97) = 0$

$\Rightarrow x = 48.5, -1$

II. $1.5y^2 - 75.75y + 145.5 = 0$

$\Rightarrow 1.5y^2 - 72.75y - 3y + 145.5 = 0$

$\Rightarrow 1.5y(y - 48.5) - 3(y - 48.5) = 0$

$\Rightarrow (y - 48.5)(1.5y - 3) = 0$

$\Rightarrow y = 48.5, 2$

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

Hence, option (E) is correct.