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The Question Bank

Quadratic Equation Questions for CGL Tier 1, CLAT, IBPS PO Pre, IBPS Clerk, LIC AAO, RBI Assistant and SBI Clerk Exams

Quadratic Eqn Quiz 24

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

1. **I. $4x^2 - (8 + \sqrt{10})x + 2\sqrt{10} = 0$**

    II. $2y^2 - (4 + 3\sqrt{11})y + 6\sqrt{11} = 0$

    A. if x > y   B. if x ≥ y

    C. if x < y   D. if x ≤ y

    E. if x = y or the relation between x and y can't be determined

2. **I. $x^3 \times 14 = x^2 \times 98$**

    II. $y^{1/3} \times 12 = 108 \div y^{2/3}$

    A. if x > y   B. if x ≥ y

    C. if x < y   D. if x ≤ y

    E. if x = y or the relation between x and y can't be determined

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

    II. $2y^2 - 9y + 10 = 0$

    A. if x > y   B. if x ≥ y

    C. if x < y   D. if x ≤ y

    E. if x = y or the relation between x and y can't be determined

4. **I. $x^2 + 3\sqrt{2}x - 80 = 0$**

    II. $y^2 - 5\sqrt{2}y - 100 = 0$

    A. if x > y   B. if x ≥ y

    C. if x < y   D. if x ≤ y

    E. if x = y or the relation between x and y can't be determined

5. **I. $x^2 - 4\sqrt{3}x - 36 = 0$**

II. $y^2 - 5\sqrt{2}y - 72 = 0$

A. if x > y   B. if x ≥ y

C. if x < y   D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

6. **I. $x^2 - 13x + 40 = 0$**

II. $y^2 - 21y + 110 = 0$

A. if x > y   B. if x ≥ y

C. if x < y   D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

7. **I. x = (208 − 142) − 32**

II. y = 83 − (212 ÷ 3) − 360

A. if x > y   B. if x ≥ y

C. if x < y   D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

8. **I. $x^2 = 30 - x$**

II. $y^2 - 13y + 40 = 0$

A. if x > y   B. if x ≥ y

C. if x < y   D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

9. **I. $35x^2 - 39x + 10 = 0$**

II. $30y^2 + 2 = 17y$

A. if x > y   B. if x ≥ y

C. if x < y   D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

10.   **I. $18x^2 - 39x + 20 = 0$**

II. $9y^2 - 51y + 52 = 0$

A. if x > y   B. if x ≥ y

C. if x < y   D. if x ≤ y

E. if x = y or the relation between x and y can't be determined

Correct answer:

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

Explanation:

1.   **I.** $4x^2 - (8 + \sqrt{10})x + 2\sqrt{10} = 0$

$4x^2 - 8x - \sqrt{10}x + 2\sqrt{10} = 0$

$4x(x - 2) - \sqrt{10}(x - 2) = 0$

$(4x - \sqrt{10})(x - 2) = 0$

$x = 2, \dfrac{\sqrt{10}}{4}$

II. $2y^2 - (4 + 3\sqrt{11})y + 6\sqrt{11} = 0$

$= 2y^2 - 4y - 3\sqrt{11}y + 6\sqrt{11} = 0$

$= 2y(y - 2) - 3\sqrt{11}(y - 2) = 0$

$= (2y - 3\sqrt{11})(y - 2) = 0$

$y = 2, \dfrac{3\sqrt{11}}{2}$

While comparing the root the root values of x and y, we find that the root values of y is greater than equal to x.

Hence, the option D is correct.

2.   **I.** $x^3 \times 14 = x^2 \times 98$

or, $\dfrac{x^3}{x^2} = \dfrac{98}{14}$

$\therefore \quad x = 7$

II. $y^{1/3} \times 12 = 108 \div y^{2/3}$

or, $y^{1/3} \times y^{2/3} = \dfrac{108}{12}$

or, $y = 9$ Clearly, $x < y$

Hence, the option C is correct.

3.   **I.** $x^2 - 12x + 32 = 0$

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

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

or, $(x - 4)\ (x - 8) = 0$

∴ $x = 4, 8$

II. $2y^2 - 9y + 10 = 0$

or, $2y^2 - 4y - 5y + 10 = 0$

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

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

∴ $y = \dfrac{5}{2}, 2$

Clearly, $x > y$.

Hence, the option A is correct.

4.   **Step I:** Find the square of the root part of middle cofficient of the given equation:

$x^2 + 3\ 2\ x - 80 = 0$

⇒ $(2)^2 = 2$

Step 2: Divide the constant part of the equation by the number we get at

step 1:

$$\Rightarrow \frac{80}{2} = 40$$

Step 3: Find such factors of 40 that can give us the integer value of the middle cofficient; +3

Two such factors are +8 & −5

Step 4: The equation, therefore, can be written as

x^2 +8 2 −5 2 − 80 = 0

Step 5: Value of x, hence will be

either −82 or +52

Similarly, value of y will be

either +102 and −52.

Now, in approximation we can assume the value of 2 to be 1.

Applying the comparision rule,

−8 < +5
−9 < −5
-5 < 5
5 > −3

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

Hence option E is correct.

5. **Step 1:** Find the square of the root part of middle cofficient of the given equation:

x^2 −4√3x − 36 = 0

$$\Rightarrow (\sqrt{3})^2 = 3$$

Step 2: Divide the constant part of the equation by the number we get at

step 1:

$$\Rightarrow \frac{36}{3} = 12$$

Step 3: Find such factors of 12 that can give us the integer value of the middle cofficient; – 4

Two such factors are –6 & +2.

Step 4: The equation, therefore, can be written as

$x^2 - 6\sqrt{3}x + 2\sqrt{3}x - 36 = 0$

Step 5: Value of x, hence will be

either $+6\sqrt{3}$ or $-2\sqrt{3}$

Similarly, value of y will be

Either $+9\sqrt{2}$ or $-4\sqrt{2}$

Now, in approximation we can assume the values of $\sqrt{2}$ and $\sqrt{3}$ to be 1.

Applying the comparision rule, we find that $-2\sqrt{2}$ (one of the values of y) is lying between $+6\sqrt{3}$ and $-2\sqrt{3}$ (which are roots of x).

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

Hence option E is correct.

6. According to the given equations:

I. $x^2 - 13x + 40 = 0$

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

$x(x - 8) - 5(x - 8) = 0$

(x – 5) (x – 8) = 0

x = 5, 8

II. $y^2 – 21y + 110 = 0$

$y^2 – 11y – 10y + 110 = 0$

y (y – 11) – 10 (y – 11) = 0

(y – 10) (y – 11) = 0

y = 10, 11

After comparison of both equations, the conclusion is x < y

Hence, option C is correct.

7. According to the given equations:

I. $x = (208 – 14^2) – 3^2$

x = (208 – 196) – 9

x = 12 – 9

x = 3

II. $y = 8^3 – (21^2 \div 3) – 360$

y = 512 – (441 ÷ 3) – 360

y = 512 – 147 – 360

y = 5

After comparison of both equations, the conclusion is x < y

Hence, option C is correct.

8. According to the given equations:

I. $x^2 = 30 - x$

$x^2 + x - 30 = 0$

$x^2 + 6x - 5x - 30 = 0$

$x(x + 6) - 5(x + 6) = 0$

$(x - 5)(x + 6) = 0$

$x = 5, -6$

II. $y^2 - 13y + 40 = 0$

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

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

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

$y = 5, 8$
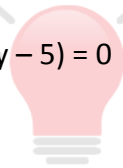
After comparison of both equations, the conclusion is $x \leq y$ or no relation

Hence, option D is correct.

9. According to the given equations:

I. $35x^2 - 39x + 10 = 0$

$35x^2 - 25x - 14x + 10 = 0$

$5x(7x - 5) - 2(7x - 5) = 0$

$(5x - 2)(7x - 5) = 0$

$x = \dfrac{2}{5}, \dfrac{5}{7}$

II. $30y^2 + 2 = 17y$

$30y^2 - 17y + 2 = 0$

$30y^2 - 12y - 5y + 2 = 0$

$6y(5y - 2) - 1(5y - 2) = 0$

$(6y - 1)(5y - 2) = 0$

$y = \dfrac{1}{6}, \dfrac{2}{5}$

After comparison of both equations, the conclusion is x ≥ y

Hence, option B is correct.

10. According to the given equations:

I. $18x^2 - 39x + 20 = 0$

$18x^2 - 15x - 24x + 20 = 0$

$3x(6x - 5) - 4(6x - 5) = 0$

$(6x - 5)(3x - 4) = 0$

$x = \dfrac{5}{6}, \dfrac{4}{3}$

II. $9y^2 - 51y + 52 = 0$

$9y^2 - 12y - 39y + 52 = 0$

$3y(y - 4) - 13(y - 4) = 0$

$(3y - 4)(3y - 13) = 0$

$y = \dfrac{4}{3}, \dfrac{13}{3}$

After comparison of both equations, the conclusion is x ≤ y.

Hence, option D is correct.