Course: SBI PO Pre

Subject: Quadratic Inequalities

Time:10 Minutes
Published Date: 10th April 2020

Directions (1-5): **इनमें से प्रत्येक प्रश्न में, दो समीकरण (**I**) और (**II**) दिए गए हैं। दोनों समीकरणों को हल करें और उत्तर दीजिए-**

(a) यदि $p > q$

(b) यदि $p \geq q$

(c) यदि $p < q$

(d) यदि $p \leq q$

(e) यदि $p = q$ या 'p' और 'q' के मध्य कोई सम्बन्ध स्थापित नहीं किया जा सकता

Q1. I. $(p + q)^2 = 3136$
II. $q + 2513 = 2569$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q2. I. $4p^2 - 16p + 15 = 0$
II. $2q^2 + 5q - 7 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q3. I. $p^2 = 49$
II. $q^2 + 15q + 56 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q4. I. $2p^2 + 5p - 12 = 0$
II. $2q^2 - q - 1 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q5. I. $p^2 - 12p + 35 = 0$
II. $q^2 - 25 = 0$
L1Difficulty 2

QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Directions (6-15): **इनमें से प्रत्येक प्रश्न में, दो समीकरण (**I**) और (**II**) दिए गए हैं। दोनों समीकरणों को हल करें और उत्तर दीजिए-**

(a) यदि x < y

(b) यदि x > y

(c) यदि x ≥ y

(d) यदि x ≤ y

(e) यदि x = y या x और y के बीच कोई संबंध स्थापित नहीं किया जा सकता है

Q6. I. $6x^2 + 77x + 121 = 0$
II. $y^2 + 9y - 22 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q7. I. $x = \sqrt{625}$
II. y = $\sqrt{676}$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q8. I. $x^2 + 4x + 4 = 0$
II. $y^2 - 8y + 16 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q9. I. $x^2 - (16)^2 = (23)^2 - 56$
II. $y^{1/3} - 55 + 376 = (18)^2$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q10. I. $x^2 - 19x + 84 = 0$
II. $y^2 - 25y + 156 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q11. I. $3x + 5y = 28$
II. $8x - 3y = 42$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q12. I. $6x^2 + 23x + 20 = 0$
II. $6y^2 + 31y + 35 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q13. I. $4x^2 - 25x + 39 = 0$
II. $18y^2 - 15y + 3 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q14. I. $x^2 - 72 = x$
II. $y^2 = 64$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Q15. I. $30x^2 + 11x + 1 = 0$
II. $42y^2 + 13y + 1 = 0$
L1Difficulty 2
QTagsQuadratic Inequalities
QCreatorPaper Maker 10

Solutions

S1. Ans.(c)
Sol.
From I

$$q = 56$$

From II

$$p + q = \pm 56$$

If p + q=-56 then p= -112
p + q=56 then p=0
so, $q > p$

S2. Ans.(a)
Sol.
From I

$$4p^2 - 10p - 6p + 15 = 0$$
$$2p(2p - 5) - 3(2p - 5) = 0$$
$$p = \frac{3}{2}, \frac{5}{2}$$

From II

$$2q^2 - 2q + 7q - 7 = 0$$
$$2q(q - 1) + 7(q - 1) = 0$$
$$q = \frac{-7}{2}, 1$$
$$p > q$$

S3. Ans.(b)
Sol.
From I

$$p = 7, -7$$

From II

$$q^2 + 7q + 8q + 56 = 0$$
$$q(q + 7) + 8(q + 7) = 0$$
$$q = -7, -8$$
$$p \geq q$$

S4. Ans.(e)
Sol.
From I

$$2p^2 + 8p - 3p - 12 = 0$$
$$2p(p + 4) - 3(p + 4) = 0$$
$$p = \frac{3}{2}, -4$$

From II

$$2q^2 - 2q + q - 1 = 0$$
$$2q(q - 1) + 1(q - 1) = 0$$
$$q = \frac{-1}{2}, 1$$

No relation can be established.

S5. Ans.(b)
Sol.
From I

$$p^2 - 7p - 5p + 35 = 0$$
$$p(p - 7) - 5(p - 7) = 0$$
$$p = 5, 7$$

From II

$$q = 5, -5$$
$$p \geq q$$

S6. Ans.(e)

Sol. I. $6x^2 + 77x + 121 = 0$

$$or, 6x^2 + 66x + 11x + 121 = 0$$
$$or, 6x(x + 11) + 11(x + 11) = 0$$
$$or, (6x + 11)(x + 11) = 0$$
$$or, x = -\frac{11}{6}, -11$$

II. $y^2 + 9y - 22 = 0$

$$or, y^2 + 11y - 2y - 22 = 0$$
$$or, y(y + 11) - 2(y + 11) = 0$$
$$or, (y - 2)(y + 11) = 0$$
$$or, y = 2, -11$$

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

S7. Ans.(a)
Sol. I. $x = \sqrt{625} = +25$
II. $y = \sqrt{676} = +26$
So, $y > x$

S8. Ans.(a)
Sol. I. $x^2 + 4x + 4 = 0$

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

II. $y^2 - 8y + 16 = 0$

$$\Rightarrow (y - 4)^2 = 0 \Rightarrow y = 4$$
$$\therefore y > x$$

S9. Ans.(d)
Sol. I. $x^2 - (16)^2 = (23)^2 - 56$
or $x^2 - 256 = 529 - 56$

$$\therefore x = \sqrt{729} = \pm 27$$

II. $y^{1/3} - 55 + 376 = (18)^2$
or $y^{1/3} = 324 + 55 - 376$

$$\therefore y = (3)^3 = 27$$
$$\therefore y \geq x$$

S10. Ans.(d)
Sol. I. $x^2 - 19x + 84 = 0$

$$x^2 - 7x - 12x + 84 = 0$$
$$(x - 7)(x - 12) = 0$$
$$\therefore x = 7, 12$$

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

$$y^2 - 13y - 12y + 156 = 0$$
$$(y - 13)(y - 12) = 0$$
$$\Rightarrow y = 13, 12$$
$$\therefore x \leq y$$

S11. Ans.(b)
Sol.
I. 3x + 5y = 28 ...(i)
II. 8x – 3y = 42 .....(ii)
Multiplying (i) by 3 and (ii) by 5

$$\begin{array}{l} 9x+15y=84 \\ 40x-15y=210 \\ \hline 49x \quad\quad =294 \end{array}$$

$x = 6$
18 + 5y = 28
y = 2
∴ x > y

S12. Ans.(e)
Sol.
I. $6x^2 + 23x + 20 = 0$
$6x^2 + 15x + 8x + 20 = 0$
3x (2x + 5) +4(2x + 5) = 0
$\therefore x = \frac{-5}{2}\ or \frac{-4}{3}$
II. $6y^2 + 31y + 35 = 0$
$6y^2 + 21y + 10y + 35 = 0$
3y (2y + 7) + 5(2y + 7) = 0
$y = \frac{-7}{2}\ or \frac{-5}{3}$
No relation

S13. Ans.(b)
Sol.
I. $4x^2 – 25x + 39 = 0$
$4x^2 - 13x – 12x + 39 = 0$
x (4x - 13) – 3 (4x - 13) = 0
$x = \frac{13}{4}\ or\ 3$
II. $18y^2 - 15y + 3 = 0$
$18y^2 - 9y – 6y + 3= 0$
9y (2y - 1) – 3 (2y - 1) = 0
$y = \frac{1}{2} or \frac{1}{3}$
x > y

S14. Ans.(e)
Sol.
I. $x^2 –x – 72 = 0$
$x^2 - 9x + 8x – 72 = 0$
x (x – 9) +8 (x – 9) = 0

x = 9 or -8
II.$y^2 = 64$
y = ± 8
No relation

S15. Ans.(d)
Sol.
I. $30x^2 + 11x + 1 = 0$
$30x^2 + 5x + 6x + 1 = 0$
5x (6x + 1) +1 (6x + 1) = 0
$x = -\frac{1}{6}\ or -\frac{1}{5}$
II. $42y^2 + 13y + 1 = 0$
$42y^2 + 6y + 7y + 1 = 0$
6y (7y + 1) +1 (7y + 1) = 0
$y = -\frac{1}{7}\ or -\frac{1}{6}$
$y \geq x$