



MISSION BANK 2024



MATHS

आरंभ बैच

QUADRATIC EQUATION

PART 1

लग जाओ 2024 के लिए

Day-5

LIVE 08:00 AM



Signification of Inequality

Two variables :- Two variables can be x and y or a and b etc. .

Conditions :-

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,

असमानता का तात्पर्य

दो चर :- x और y या a और b इत्यादि दो चर हो सकते हैं ।

परिस्थितियां :-

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ अथवा सम्बन्ध स्थापित नहीं किया जा सकता है ,

Type of Equations

Quadratic Equation
(ax² + bx + c = 0)

Unitary Equation
(ax + by + c = 0)

समीकरणों के प्रकार

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graph TD; A[समीकरणों के प्रकार] --> B[द्विघात समीकरण]; A --> C[ऐकिक समीकरण]; B --- D["(ax2 + bx + c = 0)"]; C --- E["(ax + by + c = 0)"];
```

द्विघात समीकरण

$$(ax^2 + bx + c = 0)$$

ऐकिक समीकरण

$$(ax + by + c = 0)$$

Change of symbols(In Quadratic Equations)

$$ax^2 + bx + c = 0$$

Questions of Quadratic Equations

(+, +)

(-, +)

(+, -)

(-, -)



Their answers

(-, -)

(+, +)

(-, +)

(+, -)



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$$\textcircled{1} \quad x \rightarrow (-4, -3)$$

$$y \rightarrow (+3, +2)$$

$$\checkmark x < y$$

$$x \rightarrow (-, -)$$

$$y \rightarrow (+, +)$$

$$x < y$$

Question 1-

$$(i) \quad x^2 + 7x + \underline{12} = 0$$

$$(ii) \quad y^2 - \underline{5}y + 6 = 0$$

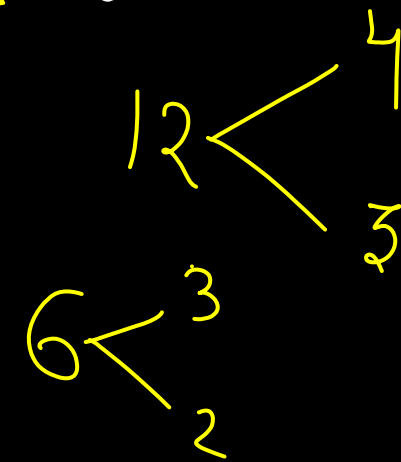
$$(i) \quad x > y$$

$$\checkmark (ii) \quad x < y$$

$$(iii) \quad x \geq y$$

$$(iv) \quad x \leq y$$

(v) $x = y$ or relation can't be established,





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$$x \rightarrow \left(\begin{array}{cc} + & - \\ - & + \end{array} \right)$$
$$y \rightarrow \left(\begin{array}{cc} - & + \\ + & - \end{array} \right)$$

$$x > y$$
$$x < y$$

Question 2-

(i) $x^2 - 6x - 16 = 0$

(ii) $y^2 + y - 16 = 0$

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

~~(v)~~ $x = y$ or relation can't be established,

$$16 \begin{array}{l} \swarrow 8 \\ \searrow 2 \end{array}$$

$$16 \begin{array}{l} \swarrow 8 \\ \searrow 2 \end{array}$$



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$$\begin{array}{l} x \rightarrow (-1, +) \\ y \rightarrow (-, +) \end{array}$$

$$\left. \begin{array}{l} x < y \\ x > y \end{array} \right\}$$

$$x \rightarrow (-23, +2)$$

$$y \rightarrow (-27, +3)$$

Question 3-

(i) $x^2 + 21x - 46 = 0$

(ii) $y^2 + 24y - 81 = 0$

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

~~(v)~~ $x = y$ or relation can't be established,



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$$\begin{array}{l} x \rightarrow (+8, +4) \\ y \rightarrow (+4, +3) \end{array}$$

$$\left. \begin{array}{l} x > y \\ x = y \end{array} \right\} \underline{\underline{x \geq y}}$$

Question 4-

(i) $x^2 - 12x + 32 = 0$

(ii) $y^2 - 7y + 12 = 0$

- (i) $x > y$
 - (ii) $x < y$
 - ~~(iii) $x \geq y$~~
 - (iv) $x \leq y$
 - (v) $x = y$ or relation can't be established,
-



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$$x \rightarrow \left(-\frac{16}{4}, -\frac{2}{4} \right) \quad | \quad y \rightarrow \left(-\frac{24}{6}, -\frac{3}{6} \right)$$

$$x \rightarrow (-2.5, -0.5) \quad | \quad y \rightarrow (-4, -0.5)$$

$x > y$ ←
 $x < y$ ←

Question 5-

(i) $4x^2 + \underline{12}x + 5 = 0$

(ii) $\underline{6}y^2 + 27y + \underline{12} = 0$

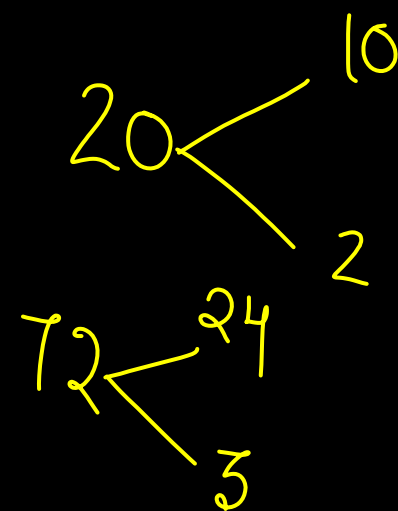
(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

~~(v)~~ $x = y$ or relation can't be established,





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$$x \rightarrow (+ , +)$$

$$y \rightarrow (- , -)$$

$$\underline{\underline{x > y}}$$

Question 6-

(i) $3x^2 - 16x + 21 = 0$

(ii) $6y^2 + 25y + 21 = 0$

~~(i)~~ $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,



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Question 7-

(i) $2x^2 - 17x + 36 = 0$

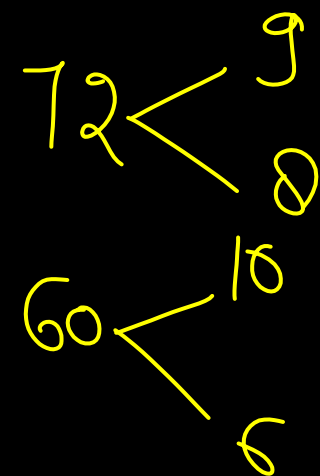
(ii) $15y^2 - 16y + 4 = 0$

Handwritten solution for Question 7:

$x \rightarrow \left(+\frac{9}{2}, +\frac{8}{2} \right)$ $y \rightarrow \left(+\frac{10}{3}, +\frac{6}{5} \right)$
 $x \rightarrow (+4.5, +4)$ $y \rightarrow (+0.66, +0.4)$

$\checkmark \checkmark \checkmark$
 $x > y$

- (i) $x > y$
- (ii) $x < y$
- (iii) $x \geq y$
- (iv) $x \leq y$
- (v) $x = y$ or relation can't be established,





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$$\textcircled{1} \quad x \rightarrow \left(\frac{+21}{7}, \frac{+10}{7} \right) \quad | \quad y \rightarrow \left(\frac{+14}{7}, \frac{+12}{7} \right)$$

$$x \rightarrow (+3, +1.4) \quad | \quad y \rightarrow (+2, +1.7)$$

$x > y$
 $x < y$

Question 8-

(i) $7x^2 - 31x + 30 = 0$

(ii) $7y^2 - 26y + 24 = 0$

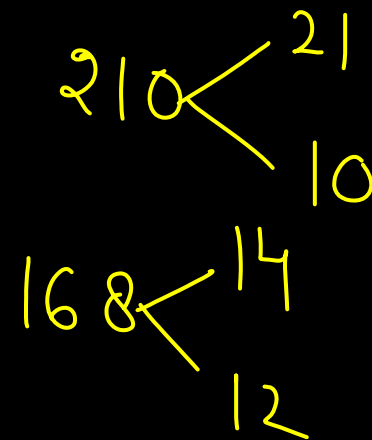
(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

~~(v)~~ $x = y$ or relation can't be established,





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$$\textcircled{1} x \rightarrow \left(-\frac{6}{3}, -\frac{5}{3} \right) \quad y \rightarrow \left(-\frac{7}{7}, -\frac{5}{7} \right)$$

$$x \rightarrow (-2, -1.6) \quad y \rightarrow (-1, -0.7)$$

$$\checkmark \checkmark x < y$$

Question 9-

(i) $3x^2 + 11x + 10 = 0$

(ii) $7y^2 + 12y + 5 = 0$

(i) $x > y$

~~(ii) $x < y$~~

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,

$$\begin{array}{l} 30 \left\{ \begin{array}{l} 5 \\ 6 \end{array} \right. \\ 55 \left\{ \begin{array}{l} 7 \\ 5 \end{array} \right. \end{array}$$



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$$x \rightarrow \left(\frac{-10}{4}, \frac{-6}{4} \right) \quad | \quad y \rightarrow \left(\frac{-22}{3}, \frac{-5}{6} \right)$$

$$x \rightarrow (-2.5, -1.5) \quad | \quad y \rightarrow (-3.6, -0.5)$$

$x > y$
 $x < y$

Question 10-

(i) $4x^2 + 16x + 15 = 0$

(ii) $6y^2 + 25y + 11 = 0$

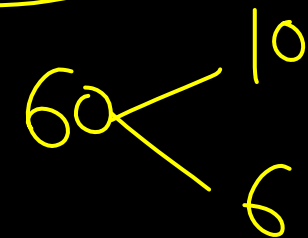
(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

~~(v)~~ $x = y$ or relation can't be established,





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Question 11-

(i) $x^2 - 10x + 25 = 0$

(ii) $y^2 - 26y + 169 = 0$

$x \rightarrow (+5, +5) \quad y \rightarrow (+13, +13)$

$x < y$

(i) $x > y$

~~(ii)~~ $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,



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Question 12-

(i) $4x^2 - 8x + 3 = 0$

(ii) $2y^2 - 7y + 6 = 0$

① $x \rightarrow \left(\frac{+6}{4}, \frac{+2}{4} \right) \quad y \rightarrow \left(\frac{+4}{2}, \frac{+3}{2} \right)$

$x \rightarrow (+1.5, +0.5) \quad y \rightarrow (+2, +1.5)$

$x < y$
 $x = y$
 $x > y$
 $x < y$

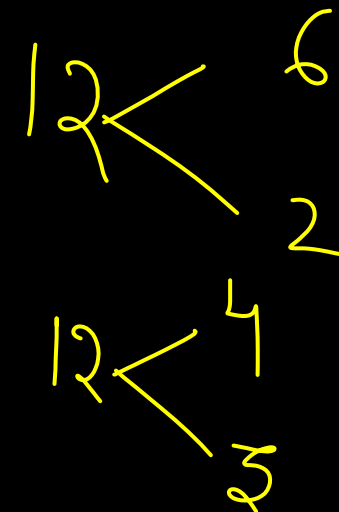
(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,





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Question 13-

(i) $4x^2 + 16x + 15 = 0$

(ii) $6y^2 + 25y + 11 = 0$

(i) $x > y$

(ii) $x < y$

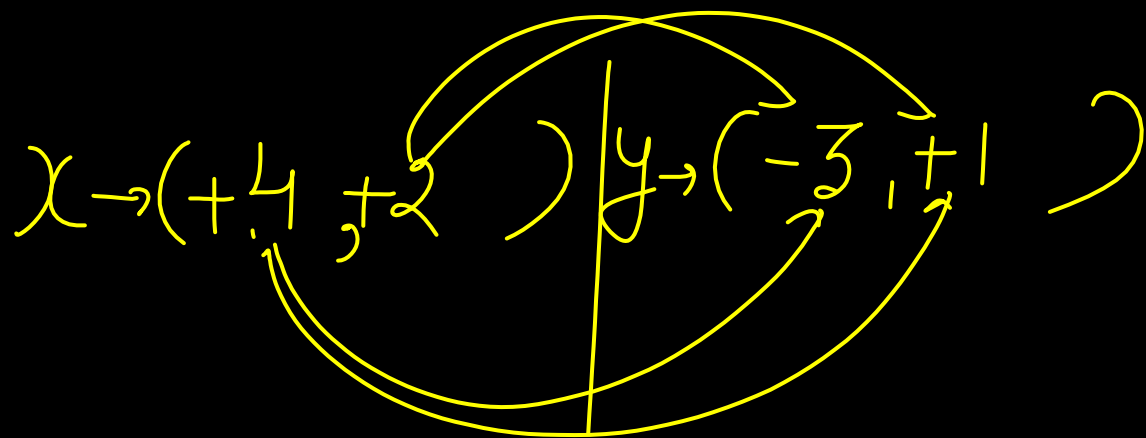
(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,



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✓ $x > y$

Question 14-

(i) $x^2 - 6x + 8 = 0$

(ii) $7y^2 + 21y - 28 = 0$

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

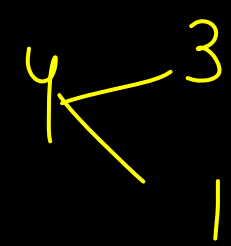
✓ (i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,





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Question 15-

(i) $3x + 4y = 18$

(ii) $4x + 3y = 17$

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,



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even power (एकचयत) Answer (+, -)
 (x) (2, 4, 6, ...)
 Odd power (विषयचयत) Answer (+)
 (x) 1, 3, 5, ...

$x^3 = 1000$ | $y^3 = 1331$
 $x \rightarrow +10$ | $y \rightarrow +11$
 $x < y$

Question 16-

(i) $x^3 - 371 = 629$

(ii) $y^3 - 543 = 788$

- (i) $x > y$
- ~~(ii) $x < y$~~
- (iii) $x \geq y$
- (iv) $x \leq y$
- (v) $x = y$ or relation can't be established,

$\frac{1000}{131}$



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e.g. $x^2 = 36$
 $x \rightarrow (+6, -6)$

$$\textcircled{1} \quad 31x = 248 \quad | \quad 32y = 224$$

$$x = 8$$

$$y = 7$$

$$\underline{\underline{x > y}}$$

Question 17-

$$(i) \sqrt{961}x + 1234 = 1482$$

$$(ii) \sqrt{1024}y + 1196 = 1420$$

~~(i)~~ $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,



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Question 18-

$$(i) \quad x = \sqrt[3]{225}$$

$$(ii) \quad y = \sqrt{-64}$$

$$(i) \quad x > y$$

$$(ii) \quad x < y$$

$$(iii) \quad x \geq y$$

$$(iv) \quad x \leq y$$

(v) $x = y$ or relation can't be established,



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$$\frac{4}{3} = 81$$

$$\textcircled{1} \quad x \rightarrow (+3, -3) \quad | \quad y \rightarrow (+3)$$

$$\left. \begin{array}{l} x = y \\ x < y \end{array} \right\} \underline{\underline{x \leq y}}$$

Question 19-

(i) $x^4 = 81$

(ii) $y' = \sqrt{9}$

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

~~(iv) $x \leq y$~~

(v) $x = y$ or relation can't be established,



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Home work

Question 20-

(i) $x^2 + 14x + 48 = 0$

(ii) $y^2 + 11y + 30 = 0$

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,



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Home work

Question 21-

(i) $x^2 + 3\sqrt{3x} - 84 = 0$

(ii) $y^2 + 9\sqrt{3x} + 60 = 0$

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,



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Question 22-

(i) $484^{\frac{1}{2}} x^2 - 96 = 256$

(ii) $144^{\frac{1}{2}} y^2 + 343 = 391$

Homework

(i) $x > y$

(ii) $x < y$

(iii) $x \geq y$

(iv) $x \leq y$

(v) $x = y$ or relation can't be established,



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Question 23- The product of two consecutive positive integer is 306. Find the smaller number.

प्रश्न 23- दो क्रमागत धनात्मक पूर्णांकों का गुणनफल 306 है।
छोटी संख्या ज्ञात कीजिये

Home work

- A. 17
- B. 18
- C. 21
- D. 8
- E. None of these

<https://t.me/mathbytarunsirmepl>

A thin, wavy yellow line underlines the text.