DPP-3 (LINEAR INEQUALITY AND MODULUS INEQUALITY) (REF CODE MLJSIRLIVE)



1. Solve the following linear inequations:

(i)
$$3x-7 > x+1$$

(ii)
$$3x+9 \ge -x+19$$

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 (ii) $3x+9 \ge -x+19$ (iii) $2(3-x) \ge \frac{x}{5}+4$

(iv)
$$-(x-3)+4<5-2x$$
 (v) $\frac{5-2x}{3}<\frac{x}{6}-5$

(v)
$$\frac{5-2x}{3} < \frac{x}{6} - 5$$

2. Solve the following linear inequations:

(i)
$$\frac{1}{2} \left(\frac{3}{5} x + 4 \right) \ge \frac{1}{3} (x - 6)$$

(ii)
$$\frac{2x-3}{4} + 9 \ge 3 + \frac{4x}{3}$$

(iii)
$$\frac{3}{x-2} < 1$$

(iv)
$$\frac{5x+8}{4-x} < 2$$

(v)
$$\frac{x-3}{x-5} > 0$$

3. Solve the following linear inequations:

(i)
$$2x-3 < 7, 2x > -4$$

(ii)
$$5x-1 < 24$$
, $5x+1 > -24$

(iii)
$$11-5x > -4$$
, $4x+13 \le -11$

(iv)
$$2(x-6) < 3x-7$$
, $11-2x < 6-x$

(v)
$$-5 < 2x - 3 < 5$$

4. Solve the following system of inequations:

$$\frac{5x}{4} + \frac{3x}{8} > \frac{39}{8}$$
 and $\frac{2x-1}{12} - \frac{x-1}{3} < \frac{3x+1}{4}$

5. Solve: (i)
$$-5 \le \frac{2-3x}{4} \le 9$$
 (ii) $10 \le -5(x-2) < 20$

6. Solve: (i)
$$|x+2| \ge 5$$

(ii)
$$|4-x|+1<3$$

Solve: (i)
$$|x+2| \ge 5$$
 (ii) $|4-x|+1<3$ (iii) $|x+\frac{1}{3}| > \frac{8}{3}$

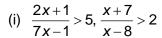
(iv)
$$\left| \frac{3x-4}{2} \right| \leq \frac{5}{12}$$

(iv)
$$\left| \frac{3x-4}{2} \right| \le \frac{5}{12}$$
 (v) $\left| \frac{2}{x-4} \right| > 1, \ x \ne 4$

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(ii)
$$\frac{x}{2x+1} \ge \frac{1}{4}, \frac{6x}{4x-1} < \frac{1}{2}$$



9. Solve: (i)
$$\left| \frac{2x-1}{x-1} \right| > 2$$

(ii)
$$\frac{\left|x-2\right|}{x-2} > 0$$

10. Solve
$$\frac{|x+2|-x}{x} < 2$$

11. Solve:
$$|x-1|+|x-2|+|x-3| \ge 6$$

12. Solve:
$$\frac{|x+3|+x}{x+2} > 1$$

13. IQ of a person is given by the formula $IQ = \frac{MA}{CA} \times 100$, where MA is mental age and CA is chronological age. If $80 \le IQ \le 140$ for a group of 12 year children, find the range of their mental age.

Answers

1. (i)
$$\left(4,\infty\right)$$
 (ii) $\left[\frac{5}{2},\infty\right]$ (iii) $\left(-\infty,\frac{10}{11}\right]$ (iv) $\left(-\infty,-2\right)$ (v) $\left(8,\infty\right)$

2. (i)
$$x \in (-\infty, 120]$$
 (ii) $x \in \left(-\infty, \frac{63}{10}\right]$ (iii) $(-\infty, 2) \cup (5, \infty)$

(iv)
$$(-\infty, 0) \cup (4, \infty)$$
 (v) $x \in (-\infty, 3) \cup (5, \infty)$

3. (i)
$$(-2, 5)$$
 (ii) $(-5, 5)$ (iii) $(-\infty, -6]$ (iv) $(5, \infty)$ (vi) $(-1, 4)$

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 $x \in (3, \infty)$

5. (i)
$$x \in \left[\frac{-34}{3}, \frac{22}{3} \right]$$
 (ii) (-2, 0]

(i) $x \in (-\infty, -7] \cup [3, \infty)$ 6.

(ii) (2, 6)

(iii) $\left(-\infty, -3\right) \cup \left(\frac{7}{3} \infty\right)$

- (iv) $\left[\frac{19}{18}, \frac{29}{18}\right]$ (v) $(2, 4) \cup (4, 6)$

- 7. (i) no solution
 - (ii) no solution
- (i) $[-1, 1] \cup (-\infty, -2) \cup (2, \infty)$ 8.
- (ii) $(-\infty, -5) \cup (-3, 3) \cup (5, \infty)$
- (i) $\left(\frac{3}{4},1\right)\cup\left(1,\infty\right)$ (ii) $\left(2,\infty\right)$ 9.
- **10.** (i) $(-\infty, 0) \cup (1, \infty)$

 $(-\infty,0]\cup[4,\infty)$ 11.

12. $x \in (-5, -2) \cup (-1, \infty)$

13. $9.6 \le MA \le 16.8$