

**06-10-30-T8-A***Simultaneous inequalities*

- **A. Write the solution set of each pair of inequalities using set notation. Then graph each solution set. In all problems  $x \in \mathbb{R}$ .**

$$[1] \begin{cases} 6x + 5 > 3x \\ 3x - 2 < 7 \end{cases}$$

$$[2] \begin{cases} 3(x - 2) > x \\ 2x - 3 < 8 \end{cases}$$

$$[3] \begin{cases} 3(x - 4) > 2x + 5 \\ 2(x - 5) > 8 \end{cases}$$

$$[4] \begin{cases} 3 - (x - 4) > 4x + 5 \\ x - 5 > 1 \end{cases}$$

$$[5] \begin{cases} 3 - 2(x + 1) > x - 5 \\ 2x > -7 \end{cases}$$

$$[6] \begin{cases} 3(2x + 5) > 9x + 3 \\ 2x + 5 > -1 \end{cases}$$

$$[7] \begin{cases} 3 - 2x > 13 - (x - 5) \\ 2(x + 3) > -12 \end{cases}$$

$$[8] \begin{cases} 3 - 2x < 13 - (x - 5) \\ 2(x + 3) > -12 \end{cases}$$

$$[9] \begin{cases} 2x \leq 20 - (2x + 12) \\ 2(x + 3) > -7 \end{cases}$$

$$[10] \begin{cases} 2x \leq 20 - (2x + 12) \\ 2(x + 3) \leq -7 \end{cases}$$

$$[11] \begin{cases} 2x \geq 20 - (2x + 12) \\ 2(x + 3) \geq -7 \end{cases}$$

$$[12] \begin{cases} \frac{2x}{5} \geq x + 12 \\ 2(x+3) < 2 \end{cases}$$

$$[13] \begin{cases} 2\left(\frac{x-5}{4}\right) \geq 5x \\ 2x + 5 < 0 \end{cases}$$

$$[14] \begin{cases} \frac{x-5}{4} - \frac{x}{3} \geq 0 \\ 2x + 5 \leq 0 \end{cases}$$

$$[15] \begin{cases} \frac{x-3}{4} - \frac{3x-5}{3} \geq 3 \\ 2x \leq 0 \end{cases}$$

---

# Answers

[1] ANS:  $\{x \in \mathbb{R} : -\frac{5}{3} < x < 3\}$

---

[2] ANS:  $\{x \in \mathbb{R} : 3 < x < \frac{11}{2}\}$

---

[3] ANS:  $\{x \in \mathbb{R} : x > 17\}$

---

[4] ANS:  $\{ \}$

---

[5] ANS:  $\{x \in \mathbb{R} : -\frac{7}{2} < x < 2\}$

---

[6] ANS:  $\{x \in \mathbb{R} : -3 < x < 4\}$

---

[7] ANS:  $\{ \}$

---

[8] ANS:  $\{x \in \mathbb{R} : x > 9\}$

---

[9] ANS:  $\{x \in \mathbb{R} : -\frac{13}{2} < x \leq 2\}$

---

[10] ANS:  $\{x \in \mathbb{R} : x \leq -\frac{13}{2}\}$

---

[11] ANS:  $\{x \in \mathbb{R} : x \geq 2\}$

---

[12] ANS:  $\{x \in \mathbb{R} : x \leq -20\}$

---

---

[13] ANS:  $\{x \in \mathbb{R} : x < -\frac{5}{2}\}$

---

[14] ANS:  $\{x \in \mathbb{R} : x \leq -15\}$

---

[15] ANS:  $\{x \in \mathbb{R} : x \leq -\frac{25}{9}\}$

---