

Complete as many of the following problems as you can with your group. You do not have to go in order. Each group will be given a specific problem that they must complete and present to either Professor MG or to Stefanie before they leave.

If **your entire table** finishes early, and you have presented your given problem, you may leave early.

(1) Solve the following linear equations, then check your answers:

(a)  $2x + 9 = 14$

(c)  $\frac{x-3}{4} = \frac{5}{14} - \frac{x+5}{7}$

(b)  $-2b + 8 = 3b - 7$

(2) Solve the following linear equations, then check your answers:

(a)  $4(2x - 4) = -20$

(c)  $\frac{1}{2}(x + 4) = \frac{1}{3}x$

(b)  $5 - \frac{2x}{3} = -9$

(3) Determine if the following equations are conditional equations, contradictions, or identities:

(a)  $5(a - 3) - 3(a - 6) = 2(a + 1) + 1$

(c)  $\frac{2-3x}{4} = 5$

(b)  $2(3m + 1) = 6m + 3$

(4) Solve the following linear inequalities. Write your answer in **interval notation**.

(a)  $-3x - 1 \geq 11$

(c)  $-6x + 4 < -14$

(b)  $5x - 7 \geq -17$

(d)  $\frac{1}{4}z - \frac{1}{2} < \frac{2z}{3} + 2$

(5) Solve the following compound inequalities. Write your answer in **interval notation**.

(a)  $-1 \leq 2x + 3 < 11$

(c)  $-2 \leq \frac{x}{3} + 5 < 4$

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

(d)  $15 \leq 7 - \frac{2}{5}x \leq 21$

Key:

- |                           |                  |                   |                         |                   |
|---------------------------|------------------|-------------------|-------------------------|-------------------|
| (1) (a) $x = \frac{5}{2}$ | (2) (a) $x = -1$ | (3) (a) Identity  | (4) (a) $(-\infty, -4]$ | (5) (a) $[-2, 4)$ |
| (b) $b = 3$               | (b) $x = 21$     | (b) Contradiction | (b) $[-2, \infty)$      | (b) $(-1, 4)$     |
| (c) $x = -\frac{14}{28}$  | (c) $x = -12$    | (c) Conditional   | (c) $(3, \infty)$       | (c) $[-7, -1)$    |
|                           |                  |                   | (d) $(-6, \infty)$      | (d) $[-35, -20]$  |