

Math 099 - Assignment 4

September 24, 2018

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary. This assignment is worth 5 points.

1. Indicate whether each compound equation or inequality is a conjunction or disjunction. Then solve, and write your answers as unions or intersections of sets.

(a) $3x + 2 = 8$ or $3x + 2 = -8$ • Disjunction

• $3x = 6$ $3x = -10$

$x = 2$ or $x = -\frac{10}{3}$

$$\{2\} \cup \left\{-\frac{10}{3}\right\} = \left\{-\frac{10}{3}, 2\right\}$$

(b) $4x + 3 < 19$ and $4x + 3 \geq -5$ Conjunction

$4x < 16$ $4x \geq -8$

$x < 4$ AND $x \geq -2$

$$\{x \mid x < 4\} \cap \{x \mid x \geq -2\} =$$

$$\{x \mid x < 4 \text{ AND } x \geq -2\} = \{x \mid -2 \leq x < 4\}$$

(c) $5x \geq 25$ or $7x - 8 \leq -29$ Disjunction

$x \geq 5$ or $7x \leq -21$

$x \leq -3$

$$\{x \mid x \geq 5\} \cup \{x \mid x \leq -3\}$$

$$= \{x \mid x \leq -3 \text{ or } x \geq 5\}$$

(d) $-2x > 10$ and $4x > 64$

Conjunction

$x < -5$ AND $x > 16$

$$\{x \mid x < -5\} \cap \{x \mid x > 16\}$$

$$= \phi$$