

Quiz 1.5

In problems 1-3, solve each compound inequality. Graph the solution set.

1. (3 points) $4x - 3 < 5$ and $-5x + 3 > 13$ $\{x \mid x \leq -2\}$

$x < 2$ $x < -2$

2. (3 points) $-2 < \frac{3x+1}{2} \leq 8$ $-4 < 3x+1 \leq 16$ $-5 < 3x \leq 15$ $\{x \mid -\frac{5}{3} < x \leq 5\}$

3. (3 points) Computing Grades Joanna desperately wants to earn a B in her History class. Her current test scores are 74, 86, 77, and 89. Her final exam is worth 2 test scores. In order to earn a B, Joanna's average must lie between 80 and 89, inclusive. What range of scores can Joanna receive on the final and earn a B in the course?

$\therefore 77 \leq x \leq 104$

score $154 \leq x \leq 208$

$$80 \leq \frac{74 + 86 + 77 + 89 + 2k}{6} \leq 89$$

$$6 \cdot 80 \leq 6 \cdot \frac{326 + 2k}{6} \leq 6 \cdot 89$$

$$480 \leq 326 + 2k \leq 534$$

$$154 \leq 2k \leq 208$$

$$77 \leq k \leq 104$$

$$A = \{x \mid x \leq 5\} \quad B = \{x \mid x > -2\}$$

$$a) A \cap B = \{x \mid -2 < x \leq 5\} \quad (-2, 5]$$

$$b) A \cup B =$$

1.6 Absolute Value Equations and Inequalities

$$|x| = 7$$

$$x = 7 \quad x = -7$$

$$|2| = 2$$

$$|-2| = 2$$

$$|z| = 1$$

$$|2x - 1| + 3 = 12$$

$$|2x - 1| = 9$$

$$2x - 1 = 9$$

$$x = 5$$

$$2x - 1 = -9$$

$$x = -4$$

You try

$$|2x - 3| = 7$$

$$|-x + 5| = -2$$

$$|-5x + 2| - 2 = 5$$

$$|-5x + 2| = 7$$

$$\begin{array}{ll} -5x + 2 = 7 & -5x + 2 = -7 \\ x = -1 \text{ or } -1.0 & x = \frac{9}{5} \text{ or } 1.8 \end{array}$$

You try

$$|-x + 5| + 7 = 5$$

what if you have abs on both sides of the equation?

$$|a| = |x|$$

$$a = x \quad a = -x$$

$$|2x-3| = |x+2|$$

$$\frac{2x-3}{-x+3} = \frac{x+2}{-x+3}$$

$$x = 5$$

$$2x-3 = -(x+2)$$

$$2x-3 = -x-2$$

$$3x = 1$$

$$x = \frac{1}{3}$$

You try

$$|x-3| = |2x+5|$$

$$|2x+3| \leq 5$$

$$-5 \leq 2x+3 \leq 5$$

$$-8 \leq 2x \leq 2$$

$$-4 \leq x \leq 1$$

$$2|-3x+2|+4 < 14$$

$$-14 < |-3x+2|+4 < 14$$

$$|u| = a \text{ is } u = a \text{ or } u = -a$$

$$|u| > a \text{ is } \begin{matrix} \text{False} \\ -a < u < a \end{matrix}$$

$$-a > u > a$$

$$|2x - 5| > 3$$

Try this

$$|7x - 3| \leq 7$$

$$|x + 3| > 4$$

$$|3x + 4| > -4$$

$$\frac{1}{4} \cdot 8$$

$$\left| \frac{1}{2}x + 1 \right| < -\frac{1}{7}$$