

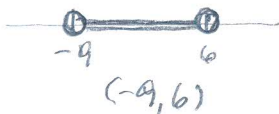
Absolute Value Inequalities WS

Name Fuston

Solve. Write answers in interval notation.

1. $\left| \frac{2x+3}{-5} \right| < 3$

$\frac{2x+3}{-5} < 3$ and $\frac{2x+3}{-5} > -3$
 $2x+3 > -15$ and $2x+3 < 15$
 $2x > -18$ $2x < 12$
 $x > -9$ and $x < 6$



4. $2|3-x|-11 > -7$

$2|3-x| > 4$
 $|3-x| > 2$
 $3-x > 2$ or $3-x < -2$
 $1 > x$ or $5 < x$



$(-\infty, 1) \cup (5, \infty)$

7. $6 \leq |x-2|$

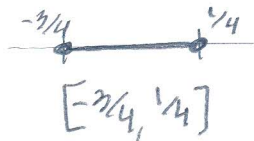
$|x-2| \geq 6$
 $x-2 \geq 6$ or $x-2 \leq -6$
 $x \geq 8$ or $x \leq -4$



$(-\infty, -4] \cup [8, \infty)$

2. $-2|4x+1| \geq -4$

$|4x+1| \leq 2$
 $4x+1 \leq 2$ and $4x+1 \geq -2$
 $4x \leq 1$ $4x \geq -3$
 $x \leq \frac{1}{4}$ and $x \geq -\frac{3}{4}$



5. $-3|3-x|+6 \geq 15$

$-3|3-x| \geq 9$
 $|3-x| \leq -3$
 \emptyset

3. $2|4x+1| < -4$

$|4x+1| < -2$
 \emptyset

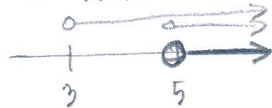
6. $5-2|x+2| > 3$

$-2|x+2| > -2$
 $|x+2| < 1$
 $x+2 < 1$ and $x+2 > -1$
 $x < -1$ and $x > -3$



8. $|x-2| < 2x-7$

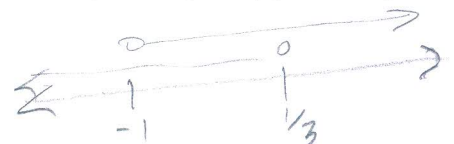
$x-2 < 2x-7$ and $x-2 > -2x+7$
 $5 < x$ $3x > 9$
 $x > 5$ and $x > 3$



$(5, \infty)$

9. $|2x| > x-1$

$2x > x-1$ or $2x < -x+1$
 $x > -1$ or $3x < 1$
 $x > -1$ or $x < \frac{1}{3}$



$(-\infty, \infty)$

Answers:

1. $(-9, 6)$ 2. $[-3/4, 1/4]$ 3. \emptyset 4. $(-\infty, 1) \cup (5, \infty)$ 5. \emptyset 6. $(-3, -1)$ 7. $(-\infty, -4] \cup [8, \infty)$ 8. $(5, \infty)$ 9. \mathbb{R}