

Day 5: Solving Absolute Value Equations and Inequalities

Notes

$|x| = 3$ True when $x = -3$ or 3

$|x| > 3$ True when $x > 3$ or $x < -3$ "or" because the inequality is greatOR.

$|x| < 3$ True when $x < 3$ and $x > -3$ "and" because inequality is greater thAND
which is $-3 < x < 3$

Examples

1) $|x - 3| = 10$

$x - 3 = 10$ or $x - 3 = -10$
 $x = 13$ or $x = -7$

2) $|x + 2| = 7$

$x + 2 = 7$ or $x + 2 = -7$
 $x = 5, -9$

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

$2x + 5 = 3x$ or $2x + 5 = -3x$
 $x = 5$ or $x = -1$

4) $|x + 4| \geq 6$

$x + 4 \geq 6$ or $x + 4 \leq -6$
 $x \geq 2$ or $x \leq -10$

5) $|2x - 7| > 1$

6) $|x + 2| < 6$

7) $|x + 6| < 2$

8) $2|x - 1| - 3 > 5$

9) $-3|x - 1| + 4 \geq 22$