

Name _____ Date _____ Period _____

Special Cases and Interval Notation - Practice

Algebra II Honors | Unit 2 | Lesson 8 Practice | TEK A2.6.F

Objective: I can use interval notation, decide the no-solution vs. all-real-numbers case, and handle the flip that changes which special case I land in.

Section 1 — Recall

1. Write $|x| < 7$ in interval notation.

2. Write $|x| \geq 2$ in interval notation.

3. An ISOLATED absolute value compared to a NEGATIVE: complete both outcomes.

$<$ or $\leq$ a negative $\rightarrow$ _____ $>$ or $\geq$ a negative $\rightarrow$ _____

Why the word ISOLATED matters: _____

4. Why does infinity never get a square bracket?

Section 2 — Apply

5. Solve $|4x - 8| < 12$, write it in interval notation, and graph it.

Sandwich: _____ Solution: _____ Interval:

Graph the solution:

-4	-3	-2	-1	0	1	2	3	4	5	6	7	8
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6. Solve $5 + |x - 2| \leq 1$.

Isolate: _____ Answer: _____

7. Solve $5 + |x - 2| \geq 1$. (Same left side as question 6, flipped symbol.)

Isolate: _____ Answer: _____

Section 3 — Challenge

8. Solve $9 - 4|2x + 1| \geq 13$. Isolating divides by a NEGATIVE, so the symbol flips BEFORE the case is decided.

After subtracting 9: _____

After dividing by -4: _____ Answer: _____

9. Solve $|3x + 1| - 4 \leq 2x - 1$ and write it in interval notation.

Isolate: _____

Solution: _____ Interval: _____

Section 4 — Explain It

10. Question 8 started with $\geq$ but ended as NO SOLUTION — the opposite of what " $\geq$ a negative" usually gives. Explain why, and what that shows about the ORDER of the steps.
