

Name _____ Date _____ Period _____

Solving Absolute Value Linear Equations - Practice

Algebra II Honors | Unit 2 | Lesson 5 Practice | TEK A2.6.E

Objective: I can isolate, split, solve, and check absolute value equations, including ones with a reversed inside or a variable on both sides.

Section 1 — Recall

1. Solve $|x| = 15$.

$x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

2. Solve $|x - 7| = 4$.

$x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

3. Solve $|2x + 3| = 9$.

$x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

4. Solve $4|x| - 3 = 17$. Isolate first.

Isolate: $\underline{\hspace{2cm}}$ $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

Section 2 — Apply

5. Solve $3|x + 4| - 2 = 13$, then confirm in Desmos.

Isolate: $\underline{\hspace{2cm}}$ $x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

Desmos shows: $\underline{\hspace{4cm}}$

6. Solve $|(3x - 6)/2| = 6$.

Split: $\underline{\hspace{4cm}}$

$x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

7. Solve $7 - 2|x - 3| = 1$. Note that isolating divides by a NEGATIVE.

Isolate: $\underline{\hspace{4cm}}$

$x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$ Does the symbol flip? $\underline{\hspace{4cm}}$

Section 3 — Challenge

8. Solve $|3x + 2| = 2x + 3$, check BOTH, and say what Desmos would show.

Candidates: $x = \underline{\hspace{2cm}}$ and $x = \underline{\hspace{2cm}}$

Checks: $\underline{\hspace{4cm}}$

Desmos: $\underline{\hspace{4cm}}$

9. Solve $|5 - 2x| = 7$. The inside is written constant-first on purpose.

Split: $\underline{\hspace{4cm}}$

$x = \underline{\hspace{2cm}}$ or $x = \underline{\hspace{2cm}}$

Section 4 — Explain It

10. Using the PIECEWISE definition from Lesson 1, explain why $|A| = k$ ($k > 0$) must become $A = k$ OR $A = -k$. Derive it, do not just state it.
