

Name _____ Date _____ Period _____

Extraneous Solutions and Empty Solution Sets - Practice

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

Objective: I can check every candidate in the original equation, identify extraneous solutions, recognize an empty solution set, and predict the validity condition before solving.

Section 1 — Recall

1. Define an extraneous solution, and distinguish a CANDIDATE from a SOLUTION.

Candidate: _____

Solution: _____

2. Is $x = 3$ a solution to $|3x - 10| = 2x - 5$? Show the check.

Left: _____ Right: _____ So: _____

3. Is $x = 2$ a solution to $|x - 6| = -x - 2$? Show the check.

Left: _____ Right: _____ So: _____

4. In Desmos, $y_2 = |x + 8|$ and $y = 2x + 1$ cross once. How many solutions, and what about the other candidate?

Solutions: _____ The other candidate is

Section 2 — Apply

5. Solve $|x + 8| = 2x + 1$. Check both. State the solution set.

Candidates: _____ Check $x = -3$: _____

Solution set: _____

6. Solve $|x - 5| = 2x + 2$. Check both. State the solution set.

Candidates: _____ Check $x = -7$: _____

Solution set: _____

7. Solve $|2x - 1| = x + 4$ and check both. Do any fail?

Candidates: _____ Both valid? _____

Section 3 — Challenge

8. Solve $|2x + 1| = x - 4$. Check EVERY candidate. Solution set? What would Desmos show?

Candidates: _____

Checks: _____

Solution set: _____ Desmos: _____

9. BEFORE solving $|3x + 5| = 2x + 4$, state what the RIGHT side must satisfy for any answer to be valid. Then solve and check against your prediction.

Prediction: _____

Candidates: _____ Result: _____

Section 4 — Explain It

10. After splitting $|A| = B$, both branches are true equations by construction. Explain how a value that solves a branch can still fail the ORIGINAL equation.
