

Math Sheet

Name _____ Score _____ / 10 Teacher _____ Date _____

Solve Radical Equations

Square carefully, then check every candidate in the original equation.

1. $\sqrt{342 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

2. $\sqrt{x^2} = 25$

Domain: real variables $x \in \mathbb{R}$

3. $\sqrt{12 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

4. $\sqrt{x^2} = 10$

Domain: real variables $x \in \mathbb{R}$

5. $\sqrt{30 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

6. $\sqrt{x^2} = 22$

Domain: real variables $x \in \mathbb{R}$

Math Sheet

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Solve Radical Equations

Square carefully, then check every candidate in the original equation.

7. $\sqrt{110 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

8. $\sqrt{x^2} = 5$

Domain: real variables $x \in \mathbb{R}$

9. $\sqrt{552 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

10. $\sqrt{x^2} = 28$

Domain: real variables $x \in \mathbb{R}$

Solve Radical Equations

Answer Key

Square carefully, then check every candidate in the original equation.

1. $\sqrt{342 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

Work:

$$342 - 1 \cdot x = x^2$$

$$x \in \{18\}$$

Check $x = -19$

left: 19

right: -19

extraneous: fails the principal-root sign condition

Check $x = 18$

left: 18

right: 18

valid: satisfies the original equation

2. $\sqrt{x^2} = 25$

Domain: real variables $x \in \mathbb{R}$

Work:

$$x^2 = 625$$

$$x \in \{-25, 25\}$$

Check $x = -25$

left: 25

right: 25

valid: satisfies the original equation

Check $x = 25$

left: 25

right: 25

valid: satisfies the original equation

3. $\sqrt{12 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

Work:

$$12 - 1 \cdot x = x^2$$

$$x \in \{3\}$$

Check $x = -4$

left: 4

right: -4

extraneous: fails the principal-root sign condition

Check $x = 3$

left: 3

right: 3

valid: satisfies the original equation

4. $\sqrt{x^2} = 10$

Domain: real variables $x \in \mathbb{R}$

Work:

$$x^2 = 100$$

$$x \in \{-10, 10\}$$

Check $x = -10$

left: 10

right: 10

valid: satisfies the original equation

Check $x = 10$

left: 10

right: 10

valid: satisfies the original equation

5. $\sqrt{30 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

Work:

$$30 - 1 \cdot x = x^2$$

$$x \in \{5\}$$

Check $x = -6$

left: 6

right: -6

extraneous: fails the principal-root sign condition

Check $x = 5$

left: 5

right: 5

valid: satisfies the original equation

6. $\sqrt{x^2} = 22$

Domain: real variables $x \in \mathbb{R}$

Work:

$$x^2 = 484$$

$$x \in \{-22, 22\}$$

Check $x = -22$

left: 22

right: 22

valid: satisfies the original equation

Check $x = 22$

left: 22

right: 22

valid: satisfies the original equation

Solve Radical Equations

Answer Key

Square carefully, then check every candidate in the original equation.

7. $\sqrt{110 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

Work:

$$110 - 1 \cdot x = x^2$$

$$x \in \{10\}$$

Check $x = -11$

left: 11

right: -11

extraneous: fails the principal-root sign condition

Check $x = 10$

left: 10

right: 10

valid: satisfies the original equation

8. $\sqrt{x^2} = 5$

Domain: real variables $x \in \mathbb{R}$

Work:

$$x^2 = 25$$

$$x \in \{-5, 5\}$$

Check $x = -5$

left: 5

right: 5

valid: satisfies the original equation

Check $x = 5$

left: 5

right: 5

valid: satisfies the original equation

9. $\sqrt{552 - 1 \cdot x} = x$

Domain: real variables $x \in \mathbb{R}$

Work:

$$552 - 1 \cdot x = x^2$$

$$x \in \{23\}$$

Check $x = -24$

left: 24

right: -24

extraneous: fails the principal-root sign condition

Check $x = 23$

left: 23

right: 23

valid: satisfies the original equation

10. $\sqrt{x^2} = 28$

Domain: real variables $x \in \mathbb{R}$

Work:

$$x^2 = 784$$

$$x \in \{-28, 28\}$$

Check $x = -28$

left: 28

right: 28

valid: satisfies the original equation

Check $x = 28$

left: 28

right: 28

valid: satisfies the original equation