Square roots: meaning, simplification and domain

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Worked example 1

Simplify exactly. State any restriction that is needed.

$$\sqrt{(-7)^2}$$

Guided attempt 2

Simplify exactly. State any restriction that is needed.

$$\sqrt{50}$$

1. Complete the square-factor split: $50 = 25 \times \square$.
2. Then $\sqrt{50} = \sqrt{25}\sqrt{\square} = \square\sqrt{2}$.
3. Check that the coefficient is nonnegative and the square of the result is 50.

Prerequisite 3

Simplify exactly. State any restriction that is needed.

$$\sqrt{49}$$

Prerequisite 4

Is this expression defined over the real numbers? Explain.

$$\sqrt{-4}$$

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Independent practice 5

Find all real values of x for which the expression is defined.

$$\sqrt{x-3}$$

Independent practice 6

Find all real values of x for which the expression is defined.

$$\sqrt{5-2x}$$

Independent practice 7

Simplify exactly. State any restriction that is needed.

$$\sqrt{x^2}$$

Independent practice 8

Find all real values of x for which the expression is defined.

$$\frac{1}{\sqrt{x+2}}$$

Exit question 9

Simplify exactly. State any restriction that is needed.

$$\sqrt{0}$$

Exit question 10

A learner writes $\sqrt{25} = \pm 5$. Give the correct value and explain the error.

$$\sqrt{25}$$