

EXTRA PRACTICE 33
Solving Equations Reducible to Quadratic
Use after Section 11.5

Name _____

Example. Solve: $(1 + 3\sqrt{x})^2 - 11(1 + 3\sqrt{x}) + 28 = 0$

Let $u = 1 + 3\sqrt{x}$ and substitute u for $1 + 3\sqrt{x}$.

$$u^2 - 11u + 28 = 0$$

$$(u - 7)(u - 4) = 0$$

$$u - 7 = 0 \quad \text{or} \quad u - 4 = 0$$

$$u = 7 \qquad u = 4$$

Substitute $1 + 3\sqrt{x}$ for u and solve for x .

$$1 + 3\sqrt{x} = 7 \quad \text{or} \quad 1 + 3\sqrt{x} = 4$$

$$3\sqrt{x} = 6 \quad \text{or} \quad 3\sqrt{x} = 3$$

$$\sqrt{x} = 2 \quad \text{or} \quad \sqrt{x} = 1$$

$$x = 4 \quad \text{or} \quad x = 1$$

Both values check. The solutions are 4 and 1.

Solve.

1. $a - 6\sqrt{a} - 27 = 0$ _____

2. $x^4 - 8x^2 + 12 = 0$ _____

3. $5x^{-2} - 5x^{-1} - 60 = 0$ _____

4. $(3x - 1)^2 + 2(3x - 1) - 15 = 0$

5. $a - 10\sqrt{a} + 9 = 0$ _____

6. $(5 - \sqrt{x})^2 + 5(5 - \sqrt{x}) - 24 = 0$

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7. $x^4 - 6x^2 + 8 = 0$ _____

8. $x - 13\sqrt{x} + 36 = 0$ _____

9. $(y^2 - 2y)^2 - 11(y^2 - 2y) + 24 = 0$

10. $x^4 + 4x^2 - 21 = 0$ _____

11. $(x^2 - 5x)^2 - 2(x^2 - 5x) - 24 = 0$

12. $a - 12\sqrt{a} + 20 = 0$ _____

13. $(4x + 2)^2 - 10(4x + 2) + 25 = 0$

14. $(\sqrt{x} - 7)^2 - 13(\sqrt{x} - 7) + 40 = 0$

15. $x^4 - 7x^2 + 12 = 0$ _____

16. $2y^{-2} + 7y^{-1} - 15 = 0$ _____