

Name:

Course/Section:

Instructor:

Chapter 7 Radical Expressions and Functions

7.6 Equations Involving Radical Expressions

Solving Radical Equations ~ The Distance Formula ~ Solving the Equation $x^n = k$

STUDY PLAN

Read: Read Section 7.6 on pages 541-550 in your textbook or eText.

Practice: Do your assigned exercises in your Book MyMathLab Worksheets

Review: Keep your corrected assignments in an organized notebook and use them to review for the test.

Key Terms

Exercises 1-3: Use the vocabulary terms listed below to complete each statement.

Note that some terms or expressions may not be used.

distance

extraneous solution

Pythagorean theorem

1. After applying the power rule, the new equation can have solutions that do not satisfy the given equation, which are sometimes called _____(s).
2. The _____ states that if a right triangle has legs a and b with hypotenuse c , then $a^2 + b^2 = c^2$.
3. The _____ between the points (x_1, y_1) and (x_2, y_2) in the xy -plane is
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}.$$

Solving Radical Equations

Exercises 1-7: Refer to Examples 1-7 on pages 542-546 in your text and the Section 7.6 lecture video.

1. Solve $\sqrt{2x+5} = 5$. Check your solution. 1. _____

2. Solve $\sqrt{3x+7} + 3 = 10$. 2. _____

3. Solve $\sqrt{8x+9} = 3x-1$. Check your results and then solve the equation graphically 3. _____

4. Solve $\sqrt{5x-1} = \sqrt{3x+1}$. 4. _____

5. $\sqrt[3]{3x+4} = -2$ 5. _____

6. Solve the equation $300 = 100\sqrt[3]{W^2}$ to estimate the weight in pounds of a bird having wings with an area of 300 square inches. 6. _____

7. Solve $x^{\frac{1}{3}} = 5 - x^2$ graphically. 7. _____

The Distance Formula

Exercises 8-9: Refer to Examples 8-9 on pages 546-548 in your text and the Section 7.6 lecture video.

8. A 20 foot ladder is positioned 12 feet from a wall. How far up the wall does the ladder reach? 8. _____

9. Find the distance between the points (5,5) and (-6,-6). 9. _____

Solving the Equation $x^n = k$

Exercises 10-13: Refer to Examples 10-11 on pages 548-549 in your text and the Section 7.6 lecture video.

Solve each equation.

10. $x^3 = -27$ 10. _____

11. $x^2 = -2$ 11. _____

12. $2(x-5)^4 = 162$ 12. _____

13. The formula $W(v) = 2.8v^3$ is used to calculate the watts generated when there is a wind velocity of v miles per hour.

(a) Find a function v that calculates the wind velocity when W watts are produced. 13. (a) _____

(b) Find the wind velocity when 1500 watts are produced. (b) _____

Understanding Concepts through Multiple Approaches

(For additional practice, visit MyMathLab.)

14. Solve the equation $2\sqrt{x+3} = 12$.

(a) Solve algebraically.

(b) Solve numerically using the table feature of a graphing calculator.

(c) Solve visually using a graphing calculator.

Did you get the same result using each method? Which method do you prefer? Explain why.