

General Algebra II Worksheet #10 Unit 8 Selected Solutions

Write a second degree equation in one variable to solve each of the following problems. Express irrational solutions rounded to the nearest tenth.

4. One number is one less than three times another. The sum of their squares is 1. Find the numbers.

first: x

second: $3x - 1$

$$x^2 + (3x - 1)^2 = 1$$

$$x^2 + 9x^2 - 6x + 1 = 1$$

$$10x^2 - 6x = 0$$

$$2x(5x - 3) = 0$$

$$x = 0 \quad \text{or} \quad x = 3/5$$

$$3x - 1 = -1 \quad 3x - 1 = 4/5$$

They are 0 and -1 or 0.6 and 0.8.

9. The product of two consecutive odd integers is seven more than their sum. What are the integers?

first: x

second: $x + 2$

$$x(x + 2) = x + (x + 2) + 7$$

$$x^2 + 2x = 2x + 9$$

$$x^2 - 9 = 0$$

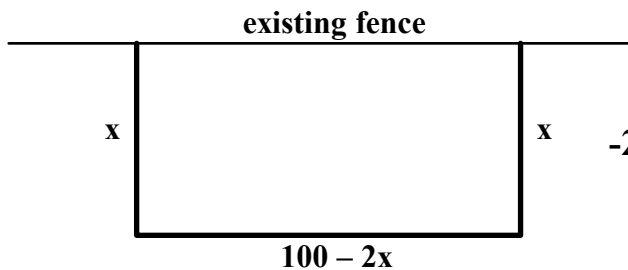
$$(x + 3)(x - 3) = 0$$

$$x = -3 \quad \text{or} \quad x = 3$$

$$x + 2 = -1 \quad x + 2 = 5$$

The numbers are -3 and -1 or 3 and 5.

10. A farmer uses 100 feet of fencing to enclose a rectangular region, using an existing fence as one side. If the total area enclosed is 1250 square feet, then find its length and width.



$$x(100 - 2x) = 1250$$

$$100x - 2x^2 = 1250$$

$$-2x^2 + 100x - 1250 = 0$$

$$x^2 - 50x + 625 = 0$$

$$(x - 25)(x - 25) = 0$$

$$x = 25$$

$$100 - 2x = 50$$

The length is 50 feet and the width is 25 feet.