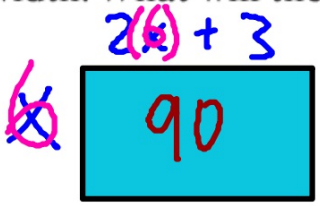
Algebra Lesson 9-7A The Quadratic Formula

23) 6 ft x 15 ft

25) 2 and 3; or 7 and 8.

Due Monday: 9-7A p.466 #1, 3, 10 ,13
Due Today: p.454 # 23, 25

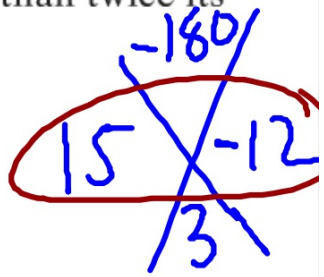
23. You are building a rectangular wading pool. You want the area of the bottom to be 90 ft^2. You want the length of the pool to be 3 ft longer than twice its width. What will the dimensions of the pool be?



$x(2x+3) = 90$

$2x^2 + 3x = 90$

$2x^2 + 3x - 90 = 0$



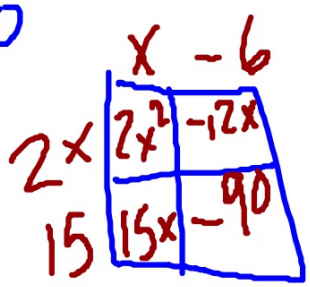
6×15

$(x-6)(2x+15) = 0$

$x = 6$

$2x + 15 = 0$

$x = -\frac{15}{2}$



25. The product of two consecutive numbers is 14 less than 10 times the smaller number. Find each number.

x = smaller number

$x+1$ = larger number

$x(x+1) = 10x - 14$

$x^2 + x = 10x - 14$

$-10x \quad +14 \quad -10x \quad +14$

$x^2 - 9x + 14 = 0$

$(x-7)(x-2) = 0$

7 $\quad$ 2

7, 8

2, 3

Find the roots: $y = 2x^2 + 8x - 5$

2

Find the roots: $y = 2x^2 + 8x - 5$

$a x^2 + b x + c$

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

a = 2

b = 8

c = -5

$$X = \frac{-8 \pm \sqrt{(8)^2 - 4(2)(-5)}}{2(2)}$$

$$X = \frac{-8 \pm \sqrt{64 + 40}}{4}$$

$$X = \frac{-8 \pm \sqrt{104}}{4}$$

$$X = \frac{-8 + \sqrt{104}}{4} \quad \text{or} \quad \frac{-8 - \sqrt{104}}{4}$$

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$x^2 + 4x = 32$

$-32 \quad -32$

$x^2 + 4x - 32 = 0$

$a = 1$

$b = 4$

$c = -32$

$x = \frac{-4 \pm \sqrt{16 - 4(1)(-32)}}{2}$

$x = \frac{-4 \pm \sqrt{16 + 128}}{2}$

$x = \frac{-4 \pm \sqrt{144}}{2}$

$x = \frac{-4 + 12}{2}$ or $\frac{-4 - 12}{2}$

$x = 4$ or $x = -8$

-32

$8 \quad -4$

4

$(x+8)(x-4) = 0$

$-8 \quad 4$

9-7A p.466 #1, 3, 10, 13

Solve using the quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

1. $2x^2 + 5x + 3 = 0$

3. $4x^2 - 12x + 9 = 0$ $a=2$ $b=5$ $c=3$ $X = \frac{-5 \pm \sqrt{25-4(2)(3)}}{4}$

10. $5x^2 + 13x - 1 = 0$ $X = \frac{-5 \pm \sqrt{1}}{4}$

13. $8x^2 - 3x - 7 = 0$ $X = \frac{-5+1}{4}$ or $\frac{-5-1}{4}$

$X = -1$ or $\frac{-6}{4} \rightarrow \frac{-3}{2}$