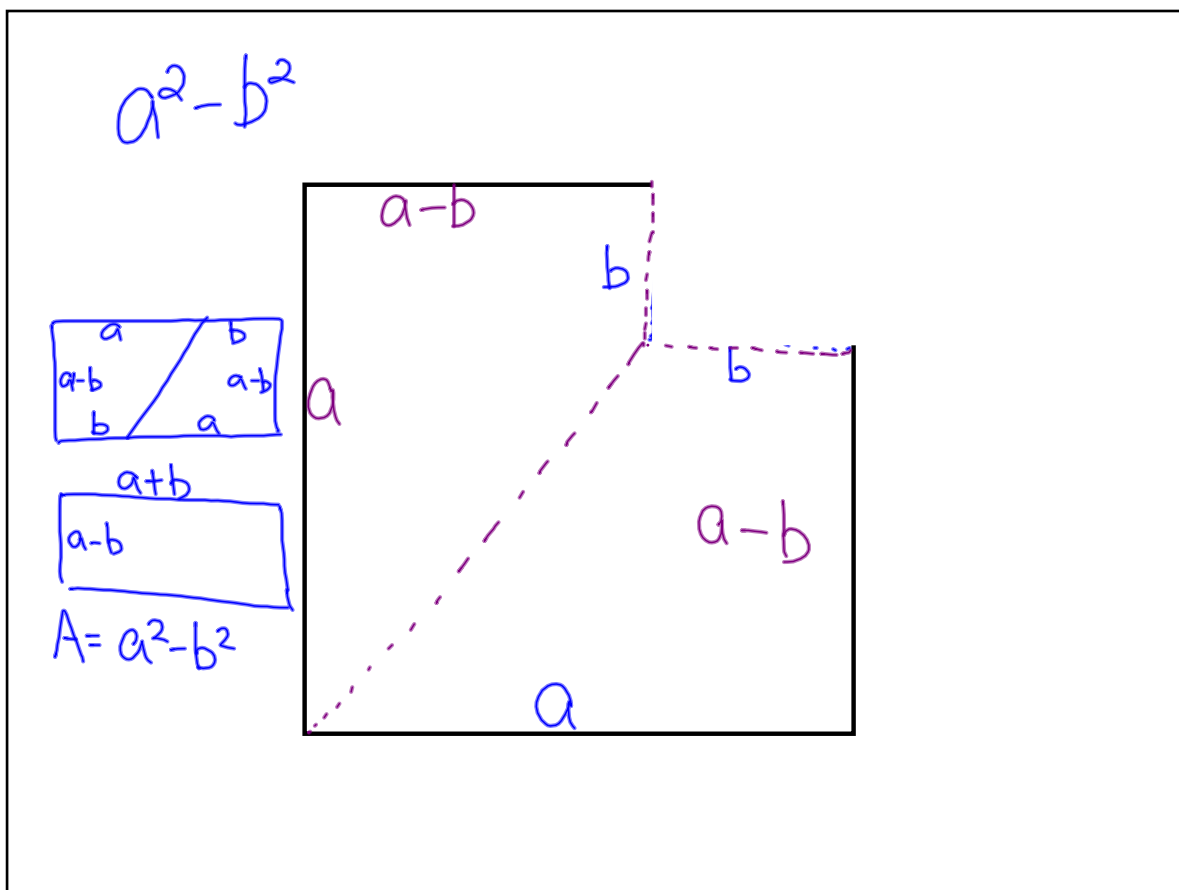


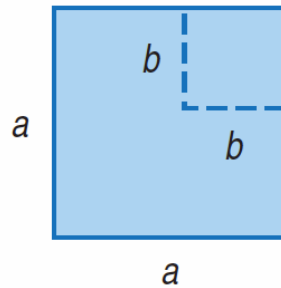
Algebra I

Lesson 9-5

- I can factor binomials that are the differences of squares.
- I can solve equations involving the differences of squares.



Factoring the difference of squares.... $a^2 - b^2$



Difference of Squares

$$a^2 - b^2 = (a + b)(a - b) \text{ or } (a - b)(a + b)$$

$$x^2 - 9 = (x + 3)(x - 3) \text{ or } (x - 3)(x + 3)$$

Factor:

$$n^2 - 25$$

$$(n+5)(n-5)$$

$$(n^2 - 15)$$

$$36x^2 - 49y^2$$

$$(6x+7y)(6x-7y)$$

$$48a^3 - 12a$$

$$12a(4a^2 - 1)$$

$$12a[(2a+1)(2a-1)]$$

$$12a(2a+1)(2a-1)$$

Apply the factoring technique more than once...

$$2x^4 - 162$$

$$2(x^4 - 81)$$

$$2(x^2+9)(x^2-9)$$

$$2(x^2+9)(x-3)(x+3)$$

$$(x+3)(x+3)$$

$$x^2 + 3x + 3x + 9$$

$$x^2 + 6x + 9$$

$$5x^3 + 15x^2 - 5x - 15$$

$$5(x^3 + 3x^2 - x - 3)$$

$$5[(x^3 + 3x^2) + (-x - 3)]$$

$$5[x^2(x+3) - 1(x+3)]$$

$$5[(x+3)(x^2 - 1)]$$

$$5[(x+3)(x+1)(x-1)]$$

$$p^2 - \frac{9}{16} = 0$$

$$\left(p + \frac{3}{4}\right)\left(p - \frac{3}{4}\right) = 0$$

$$p + \frac{3}{4} = 0 \quad p - \frac{3}{4} = 0$$

$$p = -\frac{3}{4} \quad p = \frac{3}{4}$$

$$\left\{-\frac{3}{4}, \frac{3}{4}\right\}$$

$$18x^3 = 50x$$

$$18x^3 - 50x = 0$$

$$2x(9x^2 - 25) = 0$$

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

$$2x = 0 \quad 3x+5 = 0 \quad 3x-5 = 0$$

$$x = 0$$

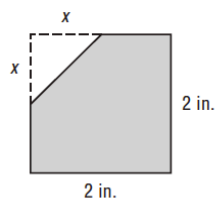
$$x = -\frac{5}{3}$$

$$x = \frac{5}{3}$$

$$\left\{-\frac{5}{3}, 0, \frac{5}{3}\right\}$$

A corner is cut off a 2-inch by 2-inch square piece of paper. The cut is x inches from a corner as shown.

- Write an equation in terms of x that represents the area A of the paper after the corner is removed.
- What value of x will result in an area that is $\frac{7}{9}$ the area of the original square piece of paper? Show how you arrived at your answer.



$\text{Square} \Rightarrow A = 4 \text{ in}^2$
 $\text{triangle} \Rightarrow A = \frac{1}{2}x^2$
 $A = 4 - \frac{1}{2}x^2$
 $\frac{7}{9} \cdot 4 = 4 - \frac{1}{2}x^2$

$\frac{28}{9} = 4 - \frac{1}{2}x^2$
 $\frac{8}{9} - \frac{1}{2}x^2 = 0$
 $18(\frac{8}{9} - \frac{1}{2}x^2) = 0 \cdot 18$
 $16 - 9x^2 = 0$
 $(4+3x)(4-3x) = 0$
 $4+3x=0$ $4-3x=0$
 $x = -\frac{4}{3}$ $x = \frac{4}{3}$ $\frac{4}{3} \text{ in or } 1\frac{1}{3} \text{ in.}$

Assignment

Pg. 505 #16-50 even; ~~quiz tomorrow~~
~~over Lessons 9-4 and 9-5~~

