

Section 5.3 Special Products

FOIL

First
Outer
Inner
Last

Multiplying
2 binomials

2. $(x+8)(x+2)$

$$5(x+2)$$
$$5x + 10$$

$$= x^2 + \underline{2x + 8x} + 16$$

$$= x^2 + 10x + 16$$

8. $(5y+4)(y-2)$

$$= 5y^2 - \underline{10y} + 4y - 8$$

$$= 5y^2 - 6y - 8$$

5.3 Do 1-23 odd

The checkpoint on wed 1/21

will cover 5.1, 5.2 and 5.3 (FOIL only
1-23 odd)

Section 5.3 Continued

2 special patterns

① Sum and Difference

$$(x+3)(x-3)$$
$$x^2 - \cancel{3x} + \cancel{3x} - 9$$

$$x^2 - 9$$

$$(y-5)(y+5)$$

$$y^2 - 25$$

Sum + Difference
 $(a+b)(a-b)$

$$= a^2 - b^2$$

34. $(4-3y)(4+3y)$

$$16 - 9y^2 = -9y^2 + 16$$

40. $(m^3+4)(m^3-4)$

$$m^6 - 16$$

② Square of a Binomial

$$(x+4)^2 \leftarrow \text{expand}$$

$$= (x+4)(x+4)$$

$$= x^2 + \underbrace{4x + 4x} + 16$$

$$= x^2 + 8x + 16$$

$$(r+b)^2$$

$$= r^2 + 2r + 3b$$

Square of a binomial

$$(a+b)^2$$

$$= a^2 + 2ab + b^2$$

Can't distribute the power over a + or -

adding
↙ ↘

$$(x+4)^2 = x^2 + 16$$

mult
↓

$$(4x)^2 = 16x^2$$

$$(x+4)(x+4)$$

$$x^2 + 4x + 4x + 16$$

$$x^2 + 8x + 16$$

$$(r-b)^2$$

$$(r-b)(r-b)$$

$$r^2 - 12r + 36$$

$$(a-b)^2$$

$$= a^2 - 2ab + b^2$$

60. $(2y - \frac{1}{2})^2$

$$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$$

$$4y^2 - 2y + \frac{1}{4}$$

$$(2y - \frac{1}{2})(2y - \frac{1}{2})$$

$$4y^2 - y - y + \frac{1}{4}$$

$$(2y)^2 - 2(2y)(\frac{1}{2}) + (\frac{1}{2})^2$$

$$4y^2 - 2y + \frac{1}{4}$$

$$4y^2 - 2y + \frac{1}{4}$$

10:16

$$54. \quad \overset{a}{(5x^2)} - \overset{b}{(3)} \quad (a-b)^2 = a^2 - 2ab + b^2$$

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

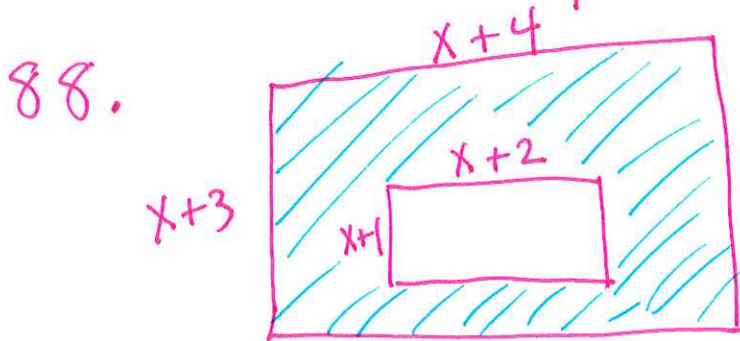
$$= 25x^4 - 30x^2 + 9$$

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

$$60. \quad \overset{a}{(2y)} - \overset{b}{\left(\frac{1}{2}\right)} \quad (a-b)^2 = a^2 - 2ab + b^2$$

$$(2y)^2 - 2(2y)\left(\frac{1}{2}\right) + \left(\frac{1}{2}\right)^2$$

$$4y^2 - 2y + \frac{1}{4}$$



$$A = l \cdot w$$

$$(x+3)(x+4) - [(x+1)(x+2)]$$

$$x^2 + 4x + 3x + 12 - [x^2 + 2x + x + 2]$$

$$x^2 + 7x + 12 - (x^2 + 3x + 2)$$

$$x^2 + 7x + 12 - x^2 - 3x - 2$$

$$4x + 10$$