

Warm up # 4

1. $(3x + 4)(3x + 4)$ $9x^2 + 12x + 12x + 16$

$$9x^2 + 24x + 16$$

2. $(x + 3)^2 = (x + 3)(x + 3) = x^2 + \underline{3x} + \underline{3x} + 9$

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

3. $(t + 5)(t - 5)$ $t^2 - 25$

$$t^2 + 5t - 5t - 25$$

4. $(2x + 1)(2x - 1) = 4x^2 - 1$

5. $(a - 4b)(a - 4b)$ $a^2 - 4ab - 4ab + 16b^2$

$$a^2 - 8ab + 16b^2$$

9.3 Find Special Products of Polynomials

$$(a+b)^2 = (a+b)(a+b)$$

FOIL $a^2 + \underline{ab} + \underline{ab} + b^2$

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

Just as....

$$(a-b)^2 = (a-b)(a-b)$$

FoIL : $a^2 - ab - ab + b^2$

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

Examples $(2x)^2$

$$(x + 5)^2$$
$$x^2 + \underline{10x} + 25$$

$2(5 \cdot x)$
multiply the
two terms together
times it by 2.

$$(2x - 3)^2$$
$$4x^2 + \underline{-12x} + 9$$

$2(-3 \cdot 2x)$
 $2(-6x)$
 $-12x$

On your own

① $(3x+4)^2$ $9x^2+24x+16$

② $(5x-2y)^2$ $25x^2 - 20xy + 4y^2$
 $2(-10xy)$

* ③ $(x+3)^2$ $x^2 + 6x + 9$
 $(x+3)(x+3)$
 $x^2 + 3x + 3x + 9$
 $x^2 + 6x + 9$

④ $(2x+1)^2$ $4x^2 + 4x + 1$
 $2(2x)$

* ⑤ $(3m+n)^2$ $9m^2 + 6mn + n^2$
 $2(2n)$

* Check by using FOIL

Sum and Difference pattern

Example: $(x + 2)(x - 2)$

FOIL: $x^2 - \cancel{2x} + \cancel{2x} - 4$ $x^2 - 4$

Rule: $(a + b)(a - b) = a^2 - b^2$

Example

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

On Your Own

1. $(t + 5)(t - 5)$ $t^2 - 25$

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

~~3.~~ $(x + 10)(x - 10)$ $x^2 - 100$

4. $(2x + 1)(2x - 1)$ $4x^2 - 1$

5. $(x + 3y)(x - 3y)$ $x^2 - 9y^2$

Why do we do this?

You can use to find
the product

$$26 \cdot 34$$

$$(30 - 4)(30 + 4)$$

$$900 - 16 = 884$$

In Class Assignment #4

1. $(x + 4)(x - 4)$
2. $(c - 13)(c + 13)$
3. $(2x + 7)(2x - 7)$
4. $(4b - 5)(4b + 5)$
5. $(x + 3)^2$
6. $(x - 1)^2$
7. $(2x + 5)^2$
8. $(3x - 1)^2$

Conclusion

Explain in your own words why knowing these special rules is important. (3 sentences)