

## Multiplying Polynomials #2 Notes

### Example 1: Simplify expressions

$$4(3d^2 + 5d) - d(d^2 - 7d + 12)$$

We need to start by multiplying the 4 through the first set of parentheses and the  $-d$  through the second set of parentheses. I'm not going to use arrows to show this, but you should understand.

$$4 \cdot 3d^2 + 4 \cdot 5d + -d \cdot d^2 + -d \cdot -7d + -d \cdot 12$$

$$12d^2 + 20d - d^3 + 7d^2 - 12d$$

Now we need to combine like terms and put the polynomial in standard form. So, we will add the  $12d^2$  and the  $7d^2$ . We will also add the  $20d$  and the  $-12d$ .

$$-d^3 + 19d^2 + 8d$$

\*\*\*\* Remember that we do not change exponents when we are adding terms.

### Example 2: Simplify expressions

$$3(5x^2 + 2x - 4) - x(7x^2 + 2x - 3)$$

We start by multiplying 3 through the first set of parentheses and  $-x$  through the second set of parentheses.

$$15x^2 + 6x - 12 - 7x^3 - 2x^2 + 3x$$

\*\*I skipped the step where I'm writing out what I'm multiplying. At this point, your brain should be able to handle that.

Now we need to combine like terms and put the polynomial in standard form.

$$-7x^3 \quad +15x^2 - 2x^2 \quad +6x + 3x \quad -12$$

$$-7x^3 + 13x^2 + 9x - 12$$

\*\*\*\* Remember that we do not change exponents when we are adding terms.