The Binomial Theorem

Each year, I have my students learn one topic on their own. The Binomial Theorem is a pretty easy one to learn yourself. You will see a lot of formulas as you do your research, but as you follow a couple of examples, you'll see it's not that bad. You can use your book, do a search online for examples, watch a YouTube video, etc. From this, I want you to learn not only the binomial theorem, but that there are a lot of resources out there to help if you need further explanation of any concept.

For each of the binomials that I would like for you to expand, I want you to find the binomial coefficients two different ways:

a) using Combinations: $_nC_r$

b) using Pascal's triangle

As you complete each expansion, check your answer using the binomial theorem calculator online.

Use the Binomial Theorem to expand and simplify the expression. Complete these in your notebooks and write notes so you can refer to them later.

1. $(x + 3)^5$

2. $(2x + 5)^4$

3. $(3x - 1)^6$

4. $(5x - 2y)^3$

5. Find the 4th term in the expansion of $(4x + 5)^9$

6. Find the coefficient of x^7 in the expansion of $(x - 2)^{10}$

7. Find a if the coefficient of x^{11} in the expansion of $\left(x^2 + \dfrac{1}{ax}\right)^{10}$ is 15

On Tuesday of next week, you will have a quiz on the Binomial Theorem. I will ask you to expand binomials just as you did above. You will not have the online calculator to check though ☺