Binomial Expansion

$(a+b)^2$ $(a+b)^3$

$(a+b)^4$ $(a+b)^{16}$

When binomials of increasing powers are expanded, the coefficients follow Pascal's Triangle pattern !

Row 0 (exponent = 0) $(a+b)^0 = \hat{1}$

Row 1 $(a+b)^1 = 1a^1 + 1b^1$

Row 2 $(a+b)^2 = 1a^2 + 2ab + 1b^2$

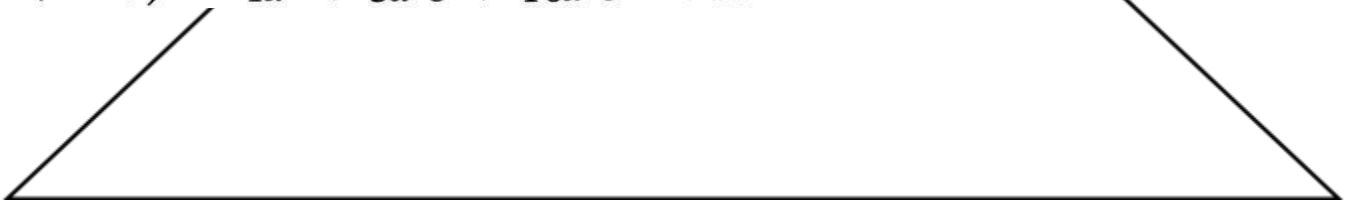
Row 3 $(a+b)^3 = 1a^3 + 3a^2b + 3ab^2 + 1b^3$

Row 4 $(a+b)^4 = 1a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + 1b^4$

Row 5 $(a+b)^5 = 1a^5 + 5a^4b + 10a^3b^2 + 10a^2b^3 + 5ab^4 + 1b^5$

Row 6

Row 7



* spot some patterns in the triangle above… !

The Binomial Theorem

Make a Rule

If n: power of the binomial and r: term number - 1,

create a genera y term in the expansion of a binomial, $(a + b)^n$.

Sample:

Use the binomial theorem to expand $(x + 3)^5$. Write your answer in its simplest form.

Try One:

Use the binomial theorem to expand $(2x - 5y)^3$. Write your answer in its simplest form.

Sample:

Find the seventh term in the expansion of $(3x - 4y)^{10}$.

Try One:

Find the x^3 term in the expansion of $(4x - 1)^9$