

$$\begin{aligned} (x+a)^3 &= x^3 + 3ax^2 + 3a^2x + a^3 \\ (x+a)^4 &= x^4 + 4ax^3 + 6a^2x^2 + 4a^3x + a^4 \\ &\dots\dots\dots \\ (x+a)^n &= \binom{n}{0}x^n + \binom{n}{1}ax^{n-1} + \binom{n}{2}a^2x^{n-2} + \dots + \binom{n}{n}a^n \end{aligned}$$

The last formula in equations (6) is known in mathematics as *Newton's binomial theorem*.

References

[1] Swietoslaw Romanowski and Wlodzimierz Wrona (1967) *Matematyka wyzsza dla studiow technicznych* Warszawa, Panstwowe Wydawnictwo Naukowe

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