Limit formulas

$$\left[\frac{A}{\pm\infty}\right]=0 \quad \left[\frac{A}{0}\right]=\pm\infty$$

Indeterminate forms:

$$\left[\frac{0}{0}\right],\left[\frac{\infty}{\infty}\right],[\infty-\infty],[0\cdot\infty],\left[1^{\infty}\right],\left[0^{0}\right],\left[\infty^{0}\right]$$

$$a^{\infty}=\begin{cases}\infty & dla\ a>1\\ 1 & dla\ a=1\\ 0 & dla\ |a|<1\end{cases}$$

$$\lim_{n\to\infty}\left(1+\frac{a}{\boxed{}}\right)^{\boxed{}}=e^{a}$$

$$\lim_{n\to\infty}\sqrt[n]{a}=1$$

Sum of an arithmetic sequence:

$$S_n=\frac{a_1+a_n}{2}\cdot n$$

Sum of a geometric sequence::

$$S_n=a_1\cdot\frac{1-q^n}{1-q}$$

eTrapez Usługi Edukacyjne E-learning Krystian Karczyński
www.etrapez.com
Tel. +48 534 864 486

Limit formulas

$$\ln 0 \to -\infty$$
$$\ln 1 = 0$$
$$\ln e = 1$$
$$\ln \infty \to \infty$$

For $a > 1$

$$\log_a 0 \to -\infty$$
$$\log_a 1 = 0$$
$$\log_a a = 1$$
$$\log_a \infty \to \infty$$

For $a \in (0,1)$

$$\log_a 0 \to \infty$$
$$\log_a 1 = 0$$
$$\log_a a = 1$$
$$\log_a \infty \to -\infty$$

Methods of factoring polynomials:

- $a^2 - b^2 = (a-b)(a+b)$
- $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$
- $ax^2 + bx + c \overset{\Delta \geq 0}{=} a(x - x_1)(x - x_2)$
- Factoring out a common factor
- Grouping the terms of a polynomial
- Other methods of factoring a polynomial

$$\lim_{\square \to 0} \frac{\sin \square}{\square} = 1 \qquad \lim_{\square \to 0} \frac{\tan \square}{\square} = 1 \qquad \lim_{\square \to 0} \frac{\arcsin \square}{\square} = 1 \qquad \lim_{\square \to 0} \frac{\arctan \square}{\square} = 1$$

$$\lim_{\square \to \infty} \left(1 + \frac{a}{\square}\right)^{\square} = e^a$$

$$\lim_{\square \to 0} \frac{\ln(1 + \square)}{\square} = 1 \qquad \lim_{\square \to 0} \frac{\log_a(1 + \square)}{\square} = \log_a e$$

$$\lim_{\square \to 0} \frac{e^{\square} - 1}{\square} = 1 \qquad \lim_{\square \to 0} \frac{a^{\square} - 1}{\square} = \ln a$$

eTrapez Usługi Edukacyjne E-learning Krystian Karczyński
www.etrapez.com
Tel. +48 534 864 486