

- 1.[1]  $\lim_{x \rightarrow 3} \frac{x^2-5x+6}{x^2-8x+15}$       2.[3]  $\lim_{x \rightarrow \infty} \frac{(x+1)(x^2+1)\dots(x^n+1)}{[(nx)^n+1]^{n/2+1/2}}$
- 3.[2]  $\lim_{x \rightarrow -1} \frac{x^3-2x-1}{x^5-2x-1}$       4.[2]  $\lim_{x \rightarrow 1} \frac{x+x^2+\dots+x^n-n}{x-1}$
- 5.[3]  $\lim_{x \rightarrow 1} \frac{x^{100}-2x+1}{x^{50}-2x+1}$       6.[4]  $\lim_{n \rightarrow \infty} \left( \frac{1^3+2^3+\dots+n^3}{n^3} - \frac{n}{4} \right)$
- 7.[1]  $\lim_{x \rightarrow \infty} \frac{\sqrt{x+\sqrt{x+\sqrt{x}}}}{\sqrt{x+1}}$       8.[2]  $\lim_{x \rightarrow -2} \frac{(x-6)^{1/3}+2}{x^3+8}$
- 9.[2]  $\lim_{x \rightarrow 0} \frac{(1+x)^{1/2}-(1-x)^{1/2}}{(1+x)^{1/3}-(1-x)^{1/3}}$       10.[3]  $\lim_{x \rightarrow \infty} [\sqrt{(x+a)(x+b)} - x]$
- 11.[3]  $\lim_{x \rightarrow 1} \left( \frac{3}{1-x^{1/2}} - \frac{2}{1-x^{1/3}} \right)$
- 12.[1]  $\lim_{x \rightarrow 0} \frac{\sin 5x - \sin 3x}{\sin x}$       13.[2]  $\lim_{x \rightarrow 0} \frac{1+\sin x - \cos x}{1+\sin px - \cos px}$
- 14.[1]  $\lim_{x \rightarrow 1} (1-x) \operatorname{tg} \frac{\pi x}{2}$       15.[2]  $\lim_{x \rightarrow 0} \frac{(1+\operatorname{tg} x)^{1/2}-(1+\sin x)^{1/2}}{x^3}$
- 16.[3]  $\lim_{x \rightarrow 0} \frac{(\cos x)^{1/2}-(\cos x)^{1/3}}{\sin^2 x}$       17.[1]  $\lim_{x \rightarrow \infty} \left( \frac{x+2}{2x-1} \right)^{x^2}$
- 18.[1]  $\lim_{x \rightarrow \infty} \left( \frac{x+a}{x-a} \right)^x$       19.[3]  $\lim_{x \rightarrow 0} \left( \frac{\cos x}{\cos 2x} \right)^{1/x^2}$
- 20.[2]  $\lim_{x \rightarrow \infty} x (\ln(x+1) - \ln x)$
- 21.[2]  $\lim_{x \rightarrow 0} \frac{\ln \cos ax}{\ln \cos bx}$       22.[2]  $\lim_{x \rightarrow a} \frac{a^x - x^a}{x-a}$       23.[3]  $\lim_{x \rightarrow a} \frac{x^x - a^a}{x-a}$
- 24.[3]  $\lim_{x \rightarrow 0} (x + e^x)^{1/x}$       25.[3]  $\lim_{n \rightarrow \infty} n(x^{1/n} - 1)$
- 26.[3]  $\lim_{n \rightarrow \infty} \left( \frac{a^{1/n} + b^{1/n}}{2} \right)^n$       27.[4]  $\lim_{x \rightarrow 0} \left( \frac{a^x + b^x + c^x}{3} \right)^{1/x}$
- 28.[3]  $\lim_{x \rightarrow 0} \frac{e^{\sin 2x} - e^{\sin x}}{\operatorname{th} x}$       29.[4]  $\lim_{h \rightarrow 0} \frac{\operatorname{arctg}(x+h) - \operatorname{arctg} x}{h}$
- 30.[1]  $\lim_{x \rightarrow \infty} ((1+x+x^2)^{1/2} - (1-x+x^2)^{1/2})$