8.2 Limits of Functions

Functions: $f(x),\ g(x)$
Argument: x
Real constants: a, k

749. $\lim_{x\to a}[f(x)+g(x)]=\lim_{x\to a}f(x)+\lim_{x\to a}g(x)$

750. $\lim_{x\to a}[f(x)-g(x)]=\lim_{x\to a}f(x)-\lim_{x\to a}g(x)$

751. $\lim_{x\to a}[f(x)\cdot g(x)]=\lim_{x\to a}f(x)\cdot\lim_{x\to a}g(x)$

752. $\lim_{x\to a}\frac{f(x)}{g(x)}=\frac{\lim_{x\to a}f(x)}{\lim_{x\to a}g(x)}$, if $\lim_{x\to a}g(x)\neq 0$.

753. $\lim_{x\to a}[kf(x)]=k\lim_{x\to a}f(x)$

754. $\lim_{x\to a}f(g(x))=f\left(\lim_{x\to a}g(x)\right)$

755. $\lim_{x\to a}f(x)=f(a)$, if the function $f(x)$ is continuous at $x=a$.

756. $\lim_{x\to 0}\frac{\sin x}{x}=1$

757. $\lim_{x\to 0}\frac{\tan x}{x}=1$

758. $\lim_{x\to 0}\frac{\sin^{-1}x}{x}=1$

759. $\lim_{x\to 0}\dfrac{\tan^{-1}x}{x}=1$

760. $\lim_{x\to 0}\dfrac{\ln(1+x)}{x}=1$

761. $\lim_{x\to\infty}\left(1+\dfrac{1}{x}\right)^{x}=e$

762. $\lim_{x\to\infty}\left(1+\dfrac{k}{x}\right)^{x}=e^{k}$

763. $\lim_{x\to 0}a^{x}=1$