Esercizi vari su limiti e sviluppi di Taylor

Limiti

- $\displaystyle\lim_{x\to 0}\frac{x-\sinh x}{x(\sin x-\arctan x)}$ $\boxed{\nexists \quad (\mp\infty \text{ se } x\to 0^{\pm})}$
- $\displaystyle\lim_{x\to+\infty}\left(\frac{2x+3}{2x+7}\right)^x$ $\boxed{e^{-2}}$
- $\displaystyle\lim_{x\to+\infty}\left(\sqrt{x^2+1}-\sqrt[3]{x^3+5x^2}\right)$ $\boxed{-\frac{5}{3}}$
- $\displaystyle\lim_{x\to+\infty}\frac{(x^3+2x^2+1)^x}{x^3+4x^2+x}$ $\boxed{+\infty}$
- $\displaystyle\lim_{x\to+\infty}\left(\frac{x^3+2x^2+1}{x^3+4x^2+x}\right)^x$ $\boxed{e^{-2}}$
- $\displaystyle\lim_{x\to 0}\frac{x\sqrt{1+2x}-\sin x-x^2}{(1-\cos\sqrt{x})\tan x}$ $\boxed{0}$
- $\displaystyle\lim_{n\to+\infty}\frac{100^n}{n!}$ $\boxed{0}$
- $\displaystyle\lim_{x\to+\infty}\left(\frac{x-3}{x+2}\right)^x$ $\boxed{e^{-5}}$
- $\displaystyle\lim_{x\to 0}\frac{x\sin x-\sin x^2}{\sqrt[3]{8+2x^4}-2}$ $\boxed{-1}$
- $\displaystyle\lim_{x\to+\infty}x\left[\left(1+\frac{1}{x}\right)^x-e\right]$ $\boxed{-\frac{e}{2}}$
- $\displaystyle\lim_{x\to-\infty}\left(\sqrt{x^4+3x+2}-\sqrt[3]{x^5+60}\right)$ $\boxed{+\infty}$
- $\displaystyle\lim_{x\to 0}\frac{4\sqrt{3+e^x}-8-x}{x^2}$ $\boxed{\frac{7}{16}}$
- $\displaystyle\lim_{x\to 0}\frac{x^3-\sin^3 x}{(1-\cos x)^2\tan x}$ $\boxed{2}$
- $\displaystyle\lim_{x\to 0}\frac{e^x-1-2x}{\arctan(1+x)-\frac{\pi}{4}}$ $\boxed{-2}$
- $\displaystyle\lim_{x\to 0}\frac{x^2-\sinh^2 x}{(e^x-\cos x)^4}$ $\boxed{-\frac{1}{3}}$
- $\displaystyle\lim_{x\to+\infty}\left[2-\cos\left(\frac{1}{\sqrt{x}}\right)\right]^x$ $\boxed{\sqrt{e}}$
- $\displaystyle\lim_{x\to+\infty}\left(e^{\frac{x-1}{x+1}}-e+1\right)^x$ $\boxed{e^{-2e}}$
- $\displaystyle\lim_{x\to 0}\frac{xe^{-\frac{x}{2}}-\ln(1+x)}{(e^x-1)^2\sin x}$ $\boxed{-\frac{5}{24}}$
- $\displaystyle\lim_{x\to+\infty}\left(\frac{2}{\pi}\arctan x\right)^x$ $\boxed{e^{-\frac{2}{\pi}}}$
- $\displaystyle\lim_{x\to 0}\frac{\sqrt{3+e^x}-2}{\sin x}$ $\boxed{\frac{1}{4}}$
- $\displaystyle\lim_{x\to+\infty}\left(\sqrt{9x^2+x}-\sqrt{x^2+5x}-2x\right)$ $\boxed{-\frac{7}{3}}$
- $\displaystyle\lim_{x\to 0}\frac{\sqrt{1-x^2}-\cos x}{(x-\sin x)(2^x-1)}$ $\boxed{-\frac{1}{\ln 2}}$
- $\displaystyle\lim_{x\to 0}\frac{e^x-x-\cos x}{1-\cos(2x)}$ $\boxed{\frac{1}{2}}$
- $\displaystyle\lim_{x\to 0}\frac{\sqrt{1+2x}-\sqrt[3]{1+3x}}{\sin\left(\frac{x^2}{1+x}\right)}$ $\boxed{\frac{1}{2}}$
- $\displaystyle\lim_{x\to+\infty}\left(\sqrt{x^2+2x}-\sqrt[3]{x^3+4x^2}\right)$ $\boxed{-\frac{1}{3}}$
- $\displaystyle\lim_{x\to+\infty}x\left(\sqrt[3]{x^3+6x^2+2x}-\sqrt{x^2+4x+3}\right)$ $\boxed{-\frac{17}{6}}$
- $\displaystyle\lim_{x\to 0}\frac{x\sin x-\tan^2 x}{\sin x(\sin x-\tan x)}$ $\boxed{\frac{5}{3}}$
- $\displaystyle\lim_{x\to\frac{\pi}{4}}\frac{\sin x-\cos x}{\tan x-1}$ $\boxed{\frac{\sqrt{2}}{2}}$
- $\displaystyle\lim_{x\to+\infty}\sqrt{x^2+x+2}\,\sin\left(\frac{x+1}{2x^2+5}\right)$ $\boxed{\frac{1}{2}}$

- $\displaystyle\lim_{x\to 0}\frac{x\sqrt{1+2x}-\sin x-x^2}{(1-\cos^3 x)x}$ $\boxed{-\frac{2}{9}}$
- $\displaystyle\lim_{x\to 0}\frac{x^3\tan\left(\frac{1}{x}\right)}{\sqrt{5x^4-x^3+10}}$ $\boxed{\text{indeterminato}}$
- $\displaystyle\lim_{x\to 0}\frac{\sinh x-x}{2-2\cos(\sin x)-x^2}$ $\boxed{\nexists \quad (\mp\infty \text{ se } x\to 0^\pm)}$
- $\displaystyle\lim_{x\to 0}\frac{8\sqrt{1+x}-8-4x+x^2}{x-\tan x}$ $\boxed{-\frac{3}{2}}$
- $\displaystyle\lim_{x\to 0}\frac{\sqrt{3+e^x}-2}{\sqrt{|x|}\sin\left(\sqrt{|x|}\right)}$ $\boxed{\nexists \quad (\pm\frac{1}{4} \text{ se } x\to 0^\pm)}$
- $\displaystyle\lim_{x\to 0}\frac{x^2-\sin^2 x}{(e^x-1-x)^2}$ $\boxed{\frac{4}{3}}$
- $\displaystyle\lim_{x\to 0}\frac{x+4\sin(3x)}{e^x-1+7x}$ $\boxed{\frac{13}{8}}$
- $\displaystyle\lim_{x\to 0}\frac{x-\sin x}{\sqrt{1+2\sin^3 x}-1}$ $\boxed{\frac{1}{6}}$
- $\displaystyle\lim_{x\to 0}\frac{x^2\sqrt{1+2x}-\sin(x^2)}{x\ln(1+6x^2)}$ $\boxed{\frac{1}{6}}$
- $\displaystyle\lim_{x\to\infty}\left(\sqrt{x^2+10x}-\sqrt[4]{x^4+16x^3}\right)$ $\boxed{1 \quad (\pm 1 \text{ se } x\to\pm\infty)}$
- $\displaystyle\lim_{x\to 0}\frac{x\cos x-\sin x}{2x^3e^{5x}}$ $\boxed{-\frac{1}{6}}$
- $\displaystyle\lim_{x\to 0}\frac{e^x-1}{20^x-10^x}$ $\boxed{\frac{1}{\ln 2}}$
- $\displaystyle\lim_{x\to 0}\frac{e^{\frac{1+2x}{1-x}}-e}{\tan(4x)}$ $\boxed{\frac{3}{4}e}$
- $\displaystyle\lim_{x\to 0}\frac{\sqrt{1+2x}-1-x}{x\sin(3x)}$ $\boxed{-\frac{1}{6}}$
- $\displaystyle\lim_{x\to 0}\frac{x-\sin x}{x(\sqrt{4+8x^2}-2)}$ $\boxed{\frac{1}{12}}$
- $\displaystyle\lim_{x\to 0}\frac{\sqrt[3]{1+3x}-\sqrt{1+2x}}{e^{\cos x}-e}$ $\boxed{\frac{1}{e}}$
- $\displaystyle\lim_{x\to 0}\frac{x^3-\sin^3 x}{x^2(\sqrt{1+\sin x}-\sqrt{1+x})}$ $\boxed{-6}$
- $\displaystyle\lim_{x\to 0}\frac{e^{-\frac{x^2}{2}}-\cos x}{x^2(e^{4x}-1-4x)}$ $\boxed{\frac{1}{96}}$
- $\displaystyle\lim_{x\to 0}\frac{x-\sin x\cos(3x)}{(e^{2x}-1)\tan^2 x}$ $\boxed{\frac{7}{3}}$
- $\displaystyle\lim_{x\to 0}\frac{e^{\sin x}-1-x}{x\sin(2x)}$ $\boxed{\frac{1}{4}}$
- $\displaystyle\lim_{x\to 0}\frac{\sin(\sin x)-x}{x\sin x-x^2+2x^3}$ $\boxed{-\frac{1}{6}}$
- $\displaystyle\lim_{x\to 0}\frac{6xe^x-6\ln(1+x)-9x^2-x^3}{\left(\sqrt{4+8x}-2-2x\right)^2}$ $\boxed{\frac{5}{2}}$
- $\displaystyle\lim_{x\to+\infty}\left[x^2\sin\left(\frac{1}{x}\right)-\sqrt{x^2+2x}\right]$ $\boxed{-1}$
- $\displaystyle\lim_{x\to 0}\frac{2\cos x-\sqrt{2}}{1-\tan x}$ $\boxed{2-\sqrt{2}}$
- $\displaystyle\lim_{x\to 0}\frac{\ln(1+\sqrt{1+x})-\ln 2}{\sqrt[3]{1+7x}-\sqrt{1+5x}}$ $\boxed{-\frac{3}{2}}$
- $\displaystyle\lim_{x\to 0}\frac{e^{-\frac{x^2}{2}}-\cos x}{(e^x-x-\cos x)^2}$ $\boxed{\frac{1}{12}}$
- $\displaystyle\lim_{x\to 0}\frac{\sqrt{1+4x}-\sqrt[3]{1+6x}}{\sqrt{1+2x}-1-x}$ $\boxed{-4}$
- $\displaystyle\lim_{x\to 0}\frac{\ln(1+\sin x)-\ln(1+x)}{x^2\sin(4x)}$ $\boxed{-\frac{1}{24}}$
- $\displaystyle\lim_{x\to 0}\frac{\sin(\sin x)-\sin x}{(e^{3x}-\cos(4x))x^2}$ $\boxed{-\frac{1}{18}}$
- $\displaystyle\lim_{x\to 0}\frac{6xe^{2x}-3\ln(1+2x)-18x^2-4x^3}{(e^x+e^{2x}-2)(1-\cos(4x))}$ $\boxed{0}$
- $\displaystyle\lim_{x\to+\infty}(e^{\frac{x+1}{x-1}}-e)\sqrt{x^2+3x}$ $\boxed{2e}$
- $\displaystyle\lim_{x\to\frac{\pi}{4}}\frac{\sin^2 x-\cos^2 x}{\tan x-1}$ $\boxed{1}$
- $\displaystyle\lim_{x\to 0}\frac{(e^{1+\sqrt{1+x}}-e^2)x^2}{\sqrt{1+2\sin x}-\sqrt{1+2x}}$ $\boxed{-3e^2}$

- $\lim_{x\to 0} x\cdot\frac{2\sqrt{1+4x+x^2}-2-4x+3x^2}{e^{-2x^2}-\cos(2x)}$ $\boxed{\frac{9}{2}}$

- $\lim_{x\to 0}\frac{e^x-1-\ln(1+x)}{\sqrt[3]{8+5x^2}-2}$ $\boxed{\frac{12}{5}}$

- $\lim_{x\to 0}\frac{2(1-\cos x)+\sin x-xe^x}{x-\sin x\cos(3x)}$ $\boxed{-\frac{1}{7}}$

- $\lim_{x\to 0^+}\frac{2\cos(\sqrt{x})-2e^x+3x}{\sqrt[3]{\cos x}-1}$ $\boxed{\frac{11}{2}}$

- $\lim_{x\to 0^+}\left[\cos(2\sqrt{x})\right]^{\frac{1}{x}}$ $\boxed{e^{-2}}$

- $\lim_{x\to+\infty}\frac{\sqrt{x^4+5x^3+2}-\sqrt[3]{x^5+2x^2+7x}}{3x^2+2x+5}$ $\boxed{\frac{1}{3}}$

- $\lim_{x\to 0}\frac{(x^4-\sin^4 x)\cos(2x)}{(e^x-1)^3(e^x-\cos x)\sin(x^2)}$ $\boxed{\frac{2}{3}}$

- $\lim_{x\to\frac{\pi}{4}}\frac{\sin x-\cos x}{\tan x-1}$ $\boxed{\frac{1}{\sqrt{2}}}$

- $\lim_{x\to+\infty}\left[x^2\sin\left(\frac{1}{x}\right)-\sqrt{x^2+4x+4}\right]$ $\boxed{-2}$

- $\lim_{x\to 0}\frac{\sqrt[4]{1+8x}-\sqrt[3]{1+6x}}{x(e^x-2^x)}$ $\boxed{\frac{2}{\ln 2-1}}$

- $\lim_{x\to 0}\frac{\sqrt[3]{1+3x}-\sqrt{1+2x}}{e^{\cos x}-e}$ $\boxed{\frac{1}{e}}$

- $\lim_{x\to+\infty}\left[\sqrt{x^4+x^2+1}-x^3\sin\left(\frac{1}{x}\right)\right]$ $\boxed{\frac{2}{3}}$

- $\lim_{x\to 0}\frac{\cos(\sin x)-e^{x^2}}{1-\cos(x^2+x)}$ $\boxed{-3}$

- $\lim_{x\to 0}\left[\frac{x}{\ln(1+x)}\right]^{-\frac{4}{3x}}$ $\boxed{e^{-\frac{2}{3}}}$

- $\lim_{x\to 0}\frac{x\sqrt{\cos x}-\tan x}{x\ln(1-x)+\sin^2 x}$ $\boxed{\frac{7}{6}}$

- $\lim_{x\to 0}\frac{2\sqrt[3]{1+3x}-2\sqrt{1+2x}+x^2}{e^x-e^{\sin x}}$ $\boxed{14}$

- $\lim_{x\to+\infty}\frac{x^3\sin\left(\frac{2}{x+1}\right)}{\sqrt{16x^4+5x+30}}$ $\boxed{\frac{1}{2}}$

- $\lim_{x\to 0}\frac{2-x-\sqrt{5-e^{4x}}}{\sqrt{1+4x+x^2}-e^{2x}}$ $\boxed{-\frac{9}{14}}$

- $\lim_{x\to 0}\left(\frac{\sqrt{1-4x}-1}{e^{-2x}-1}\right)^{\frac{1}{2x}}$ $\boxed{\sqrt{e}}$

- $\lim_{x\to 0}\frac{1-\cos(2x)}{\sqrt{x^2+2x^3}-\ln(1+x)}$ $\boxed{\nexists\quad(\frac{4}{3}\text{ se } x\to 0^+,\ 0\text{ se } x\to 0^-)}$

Polinomi di Taylor in $x = 0$

- P_3: $f(x)=\sqrt{1-x}\,e^{1+x+2x^2}$ $\boxed{e\left(1+\frac{x}{2}+\frac{15}{8}x^2+\frac{35}{48}x^3\right)}$

- P_3: $f(x)=e^{\frac{\sqrt{x+1}}{x-1}}$ $\boxed{\frac{1}{e}\left(1-\frac{3}{2}x-\frac{x^2}{4}+\frac{x^3}{16}\right)}$

- P_3: $f(x)=\sqrt{1+x+2x^2}\,\ln(1+3x)$ $\boxed{3x-3x^2+\frac{75}{8}x^3}$

- P_3: $f(x)=\frac{x+\sin x}{\sqrt{1+x+x^2}}$ $\boxed{2x-x^2-\frac{5}{12}x^3}$

- P_5: $f(x)=\sin(\sin x)$ $\boxed{x-\frac{x^3}{3}+\frac{x^5}{10}}$

- P_4: $f(x)=e^{\cos x}$ $\boxed{e\left(1-\frac{x^2}{2}+\frac{x^4}{6}\right)}$

- P_3: $f(x)=\frac{e^x-1}{e^x+3}$ $\boxed{\frac{x}{4}+\frac{x^2}{16}-\frac{x^3}{192}}$

- P_2: $f(x)=\frac{e^x-1}{\ln(1+x)}$ $\boxed{1+x+\frac{x^2}{3}}$

- P_3: $f(x)=\frac{e^x-1}{x+e^x}$ $\boxed{x-\frac{3}{2}x^2+\frac{8}{3}x^3}$

- P_3: $f(x)=\frac{e^x-\cos x}{2+x}$ $\boxed{\frac{x}{2}+\frac{x^2}{4}-\frac{x^3}{24}}$

- P_3: $f(x)=\sqrt{\dfrac{1+3e^x}{1+x+x^2}}$ $\boxed{2-\dfrac{x}{4}-\dfrac{25}{64}x^2+\dfrac{359}{512}x^3}$
- P_3: $f(x)=\sqrt[3]{1+3x}-\sqrt{1+2x}$ $\boxed{-\dfrac{x^2}{2}+\dfrac{7}{6}x^3}$
- P_3: $f(x)=\dfrac{\ln(1+3x)}{\cos x+\sin x}$ $\boxed{3x-\dfrac{15}{2}x^2+18x^3}$
- P_3: $f(x)=\dfrac{x+e^x}{e^{-x}+\cos x}$ $\boxed{\dfrac{1}{2}+\dfrac{5}{4}x+\dfrac{7}{8}x^2+\dfrac{9}{16}x^3}$
- P_2: $f(x)=\dfrac{e^x+\ln(1+x)}{x+e^{2x}}$ $\boxed{1-x+x^2}$
- P_3: $f(x)=\dfrac{e^x-1+x^2}{e^{2x}-1}$ $\boxed{\dfrac{1}{2}+\dfrac{x}{4}-\dfrac{x^2}{2}+\dfrac{3}{16}x^3}$
- P_2: $f(x)=\dfrac{\sqrt{1+x+x^2}}{\sqrt[3]{1+3x+2x^2}}$ $\boxed{1-\dfrac{x}{2}+\dfrac{29}{24}x^2}$
- P_3: $f(x)=\dfrac{e^x-1-x+x^2}{e^{2x}-1}$ $\boxed{\dfrac{3}{4}x-\dfrac{2}{3}x^2+\dfrac{3}{16}x^3}$
- P_2: $f(x)=\dfrac{\sqrt[3]{1+3x+4x^2}}{1+\ln(1+x)}$ $\boxed{1+\dfrac{5}{6}x^2}$
- P_3: $f(x)=\dfrac{x\ln(1+x)-\sin^2 x}{\sin x}$ $\boxed{-\dfrac{x^2}{2}+\dfrac{2}{3}x^3}$
- P_3: $f(x)=\dfrac{e^x}{e^x+x}$ $\boxed{1-x+2x^2-\dfrac{7}{2}x^3}$
- P_3: $f(x)=\dfrac{e^{\sin x}-1}{e^x-1}$ $\boxed{1-\dfrac{x^2}{6}-\dfrac{x^3}{12}}$
- P_3: $f(x)=\dfrac{\sqrt{4+4x}-2}{\sqrt[3]{1+6x}}$ $\boxed{x-\dfrac{9}{4}x^2+\dfrac{69}{8}x^3}$
- P_2: $f(x)=\dfrac{1+xe^x}{2+x+x^2}$ $\boxed{\dfrac{1}{2}+\dfrac{x}{4}+\dfrac{x^2}{8}}$
- P_3: $f(x)=\sqrt{4+3x+x^2}$ $\boxed{2+\dfrac{3}{4}x+\dfrac{7}{64}x^2+\dfrac{21}{512}x^3}$
- P_2: $f(x)=\sqrt{\dfrac{1+x}{1-x}}$ $\boxed{1+x+\dfrac{x^2}{2}}$
- P_2: $f(x)=\dfrac{e^x-1}{\sin x\sqrt{1+2x}}$ $\boxed{1-\dfrac{x}{2}+\dfrac{4}{3}x^2}$
- P_3: $f(x)=e^{\sqrt{2+x}}$ $\boxed{e^{\sqrt{2}}\left(1+\dfrac{\sqrt{2}}{4}x+\dfrac{2-\sqrt{2}}{32}x^2+\dfrac{5\sqrt{2}-6}{384}x^3\right)}$
- P_3: $f(x)=\sqrt[3]{1+6x+6x^2}-\sqrt{1+4x+8x^3}$ $\boxed{-\dfrac{8}{3}x^3}$
- P_3: $f(x)=\dfrac{1+e^{-x}}{2+x}$ $\boxed{1-x+\dfrac{3}{4}x^2-\dfrac{11}{24}x^3}$
- P_2: $f(x)=\dfrac{xe^x-\sin x}{e^{2x}-1}$ $\boxed{\dfrac{x}{2}-\dfrac{x^2}{6}}$

Comportamento in $x=0$

- $f(x)=\dfrac{xe^x-\sin x}{\sqrt{1-\cos(2x)}}$ $\boxed{\dfrac{|x|}{\sqrt{2}}}$

Comportamento a $+\infty$

- $f(x)=\sqrt{x^4-4x^2+x}-x^2\cos\left(\dfrac{2}{x}\right)$ $\boxed{\dfrac{1}{2x}}$
- $f(x)=\ln(2+e^x)-x$ $\boxed{\dfrac{2}{e^x}}$
- $f(x)=\arctan x$ $\boxed{\dfrac{\pi}{2}-\dfrac{1}{x}}$
- $\sqrt{\dfrac{x^2+3x+2}{x^3+2x^2+4x}}-\dfrac{1}{\sqrt{x}}-\dfrac{1}{2x^{\frac{3}{2}}}$ $\boxed{-\dfrac{17}{8x^{\frac{5}{2}}}}$

- $e^{\frac{x+1}{x^2+2x+2}} - 1 - \frac{1}{x} + \frac{1}{2x^2}$ $\boxed{-\frac{5}{6x^3}}$

- $xe^{\frac{1}{x}} \sin\left(\frac{1}{x}\right) - 1 - \frac{1}{x} - \frac{1}{x^2}$ $\boxed{-\frac{2}{3x^2}}$

- $e^{\frac{1}{x+1}} - \cos\left(\frac{1}{x}\right) - \frac{1}{x}$ $\boxed{\frac{1}{6x^3}}$

- $\exp\left[\sqrt{x}\sin\left(\frac{1}{\sqrt{x}}\right) - 1\right] - 1 + \frac{1}{6x}$ $\boxed{\frac{1}{45x^2}}$

- $f(x) = e^{\frac{1}{x}} - \cos\left(\frac{1}{x}\right) - \sin\left(\frac{1}{x}\right) - \frac{1}{x^2} + \frac{A}{x^3}$, con $A \in \mathbb{R}$

  $$\boxed{\begin{cases} \frac{1+3A}{3x^3}, & \text{se } A \neq -\frac{1}{3} \\ \frac{1}{360x^6}, & \text{se } A = -\frac{1}{3} \end{cases}}$$

- $f(x) = 2e^{\frac{1}{x}} + 2\arctan x - 2 - \pi$ $\boxed{\frac{1}{x^2}}$

- $f(x) = x\sin\left(\frac{1}{x+1}\right) - e^{-\frac{3}{3x+1}}$ $\boxed{\frac{1}{9x^3}}$

- $f(x) = e^{\frac{1}{x+1}} - \cos\left(\frac{1}{x}\right) - \sin\left(\frac{1}{x}\right)$ $\boxed{\frac{1}{3x^3}}$

- $f(x) = e^{\frac{2}{2x+1}} - 1 - \sin\left(\frac{1}{x}\right)$ $\boxed{\frac{1}{12x^3}}$

- $f(x) = e^{\frac{2}{x-3}} - e^{\frac{4}{2x+5}}$ $\boxed{\frac{11}{x^2}}$

Comportamento in $x = \frac{\pi}{2}$

- $f(x) = \tan(x)$ $\boxed{\frac{1}{\frac{\pi}{2} - x}}$

Altri

- Dimostrare che $\arctan x - x - x^3 < \frac{x^5}{5}$, per $x > 0$.

- Siano x e y vicini a 1. Se x varia di una piccola percentuale p, y varia di una piccola percentuale q. Di quanto varia $z = \sqrt{x} \cdot 10^y$?

  $\boxed{\frac{p}{2} + q\ln 10}$

- Calcolare: $\sqrt[3]{3500}$. $\boxed{\text{Hint:} \quad 15\sqrt[3]{1+\frac{1}{27}}}$

- Calcolare: $\tan(130°)$.

  $$\boxed{\text{Hint:} \quad \tan\left(\frac{3}{4}\pi - \frac{\pi}{36}\right) = 1 - \frac{2}{1-\tan\left(\frac{\pi}{36}\right)}}$$

- Calcolare: $\sqrt{10}$. $\boxed{\text{Hint:} \quad 3\sqrt{1+\frac{1}{9}}}$

- Calcolare: $\ln 3$.

  $$\boxed{G^2_{(3)}: \quad -\ln\left(1-\frac{1}{2}\right) + \ln\left(1+\frac{1}{2}\right) \approx 1.098447}$$

- Calcolare: $\ln 300$.

  $$\boxed{G^2_{(3)}: \quad -8\ln\left(1-\frac{1}{2}\right) + \ln\left(1+\frac{11}{64}\right) \approx 5.702535}$$

- Calcolare: $\ln 1200$.

  $$\boxed{G^2_{(3)}: \quad -10\ln\left(1-\frac{1}{2}\right) + \ln\left(1+\frac{11}{64}\right) \approx 7.088517}$$