derivative

Examples Random

Assuming "derivative" refers to a computation | Use as a general topic or referring to a mathematical definition or a word instead

function to differentiate: x^1/2sinx/tg x

Also include: differentiation variable

Derivative:

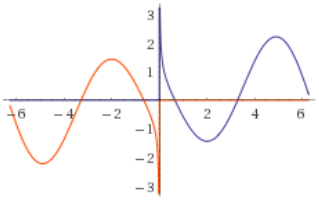
Step-by-step solution

$$\frac{d}{dx}\left(\frac{\sqrt{x}\,\sin(x)}{\tan(x)}\right) = \frac{\cos(x) - 2x\sin(x)}{2\sqrt{x}}$$

Share

Plots:

Complex-valued plot ▼

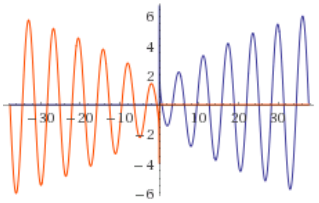


(x from −6.3 to 6.3)

real part
imaginary part

Enable interactivity

Complex-valued plot ▼



(x from −37.7 to 37.7)

real part
imaginary part

Enable interactivity

Alternate forms:

$$-\frac{2x\sin(x) - \cos(x)}{2\sqrt{x}}$$

$$\frac{\cos(x)}{2\sqrt{x}} - \sqrt{x}\,\sin(x)$$

$$-\frac{1}{2}i\,e^{-ix}\sqrt{x} + \frac{1}{2}i\,e^{ix}\sqrt{x} + \frac{e^{-ix}}{4\sqrt{x}} + \frac{e^{ix}}{4\sqrt{x}}$$

Numerical roots:

More digits

$x \approx 0.653271187094403\ldots$

$x \approx 3.29231002128209\ldots$

$x \approx 6.36162039206566\ldots$

$x \approx 9.47748570542080\ldots$

$x \approx 12.6060134442754\ldots$

$x \approx 15.7397193560049\ldots$

$x \approx 18.8760383379859\ldots$

$x \approx 22.0138576366230\ldots$

$x \approx 25.1526172579356\ldots$

$x \approx 28.2920048800691\ldots$

$x \approx 31.4318326345900\ldots$

$x \approx 34.5719807601687\ldots$

Property as a real function:

Domain:

$\{x \in \mathbb{R} : x > 0\}$ (all positive real numbers)

$\mathbb{R}$ is the set of real numbers

Series expansion at x=0:

$$\frac{1}{2\sqrt{x}} - \frac{5x^{3/2}}{4} + \frac{3x^{7/2}}{16} + O\left(x^{11/2}\right)$$

(Puiseux series)

Big-O notation »

Indefinite integral:

Step-by-step solution

$$\int \frac{\cos(x) - 2x\sin(x)}{2\sqrt{x}}\,dx = \sqrt{x}\,\cos(x) + \text{constant}$$

Differential geometric curves:

(requires interactivity)

Enable Interactivity

POWERED BY THE **WOLFRAM LANGUAGE**

Standard computation time exceeded... Try again with additional computation time »

Related Queries:

- = series of (sqrt(x) sin(x))/(tan(x)) at x = 0
- = series (f(x+eps)/f(x))^(1/eps) at eps = 0
- = curvature of (sqrt(x) sin(x))/(tan(x))
- = handwritten style limit of (sqrt(x) sin(x))/(…