Mendel University Brno

Derivatives – the chain rule

Robert Mařík

You will differentiate composite functions.

- `Full screen` button or `CTRL+L` switshes between window and Full Screen mode.

- `Start` button gives you a random problem.

- `Hint` button shows you a hint.

- `Solution` button shows you a solution.

- `Next question` button shows another random problem.

- `Home` button moves here.

Derivatives
Robert Mařík

created using AcroTEX

Start

Full Screen

Close

Home

Question

Find y' for $y = (3x - 1)^6$.

Question

Find y' for $y = e^{-x}$.

Question

Find y' for $y = e^{1-x^2}$.

Question

Find y' for $y = e^{4x-1}$.

Question

Find y' for $y = \ln(1 - x)$.

Question

Find y' for $y = (x+3)^{-3}$.

Find y' for $y = \ln(\sin x)$.

Question

Find y' for $y = \sin(2x)$.

Question

Find y' for $y = \sin^2 x$.

Question

Find y' for $y = \cos^3(2x)$.

Question

Find y' for $y = \sin(e^x)$.

Question

Find y' for $y = \sin(\ln x)$.

Question

Find y' for $y = \operatorname{arctg}(x^2)$.

Find y' for $y = \operatorname{arctg} \dfrac{1}{x}$.

Question

Find y' for $y = \ln(x^2 - 1)$.

Question

Find y' for $y = \arcsin \sqrt{x}$.

Question

Find y' for $y = \operatorname{arctg} \sqrt{x}$.

Question

Find y' for $y = \operatorname{arctg} x^2$.

Question

Find y' for $y = \operatorname{arctg}^2 x$.

Question

Find y' for $y = \operatorname{tg} 3x$.

Question

Find y' for $y = \operatorname{tg} \ln x$.

Question

Find y' for $y = \operatorname{tg}^3 x$.

Answer

$$y' = \left((3x - 1)^6\right)' = 18(3x - 1)^5$$

Answer

$$y' = \left(e^{-x}\right)' = -e^{-x}$$

Answer

$$y' = \left(e^{1-x^2}\right)' = -2xe^{1-x^2}$$

Answer

$$y' = \left(e^{4x-1}\right)' = 4e^{4x-1}$$

Answer

$$y' = (\ln(1-x))' = -\frac{1}{1-x}$$

Answer

$$y' = \left((x+3)^{-3}\right)' = -3(x+3)^{-4}$$

Answer

$$y' = (\ln(\sin x))' = \frac{\cos x}{\sin x}$$

Answer

$$y' = (\sin(2x))' = 2\cos(2x)$$

Answer

$$y' = \left(\sin^2 x\right)' = 2\sin x \cos x$$

Answer

$$y' = \left(\cos^3(2x)\right)' = -6\cos^2(2x)\sin(2x)$$

Answer

$$y' = (\sin(e^x))' = e^x \cos(e^x)$$

Answer

$$y' = (\sin(\ln x))' = \frac{\cos(\ln x)}{x}$$

Answer

$$y' = \left(\operatorname{arctg}(x^2)\right)' = \frac{2x}{1 + x^4}$$

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Answer

$$y' = \left(\operatorname{arctg} \frac{1}{x}\right)' = \frac{1}{1 + \left(\frac{1}{x}\right)^2} \cdot \left(-\frac{1}{x^2}\right)$$

Answer

$$y' = \big(\ln(x^2 - 1)\big)' = \frac{2x}{x^2 - 1}$$

Answer

$$y' = \left(\arcsin \sqrt{x}\right)' = \frac{1}{\sqrt{1-x}} \frac{1}{2} \frac{1}{\sqrt{x}}$$

Answer

$$y' = \left(\operatorname{arctg}\sqrt{x}\right)' = \frac{1}{1+x}\frac{1}{2}\frac{1}{\sqrt{x}}$$

Answer

$$y' = \left(\operatorname{arctg} x^2\right)' = \frac{1}{1+x^4} 2x$$

Answer

$$y' = \left(\mathrm{arctg}^2\, x\right)' = 2\frac{\mathrm{arctg}\, x}{1 + x^2}$$

Answer

$$y' = (\operatorname{tg} 3x)' = \frac{3}{\cos^2 3x}$$

Answer

$$y' = (\operatorname{tg} \ln x)' = \frac{1}{x \cos^2 \ln x}$$

Hint

Solution

Next question

Home

Answer

$$y' = \left(\operatorname{tg}^3 x\right)' = 3 \operatorname{tg}^2 x \frac{1}{\cos^2 x}$$