Obliczyć pochodną funkcji

Obliczyć pochodną funkcji $f(x)$:

$$f(x)=\frac{\sqrt{x}+1}{\sqrt[3]{x}}$$

$$f(x)=\left(\sqrt{x}+1\right)\cdot x^{-\frac{1}{3}}$$

$$f(x)=\left(x^{\frac{1}{2}}+1\right)\cdot x^{-\frac{1}{3}}$$

Pierwszy sposób

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{1}{2}}\cdot x^{-\frac{1}{3}}+\left(x^{\frac{1}{2}}+1\right)\cdot\left(-\frac{1}{3}\right)\cdot x^{-1\frac{1}{3}}$$

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{1}{2}}\cdot x^{-\frac{1}{3}}+\left(x^{\frac{1}{2}}+1\right)\cdot\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{1}{2}+\left(-\frac{1}{3}\right)}+\left(x^{\frac{1}{2}}+1\right)\cdot\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{3}{6}-\frac{2}{6}}+\left(x^{\frac{1}{2}}+1\right)\cdot\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{5}{6}}+\left(x^{\frac{1}{2}}+1\right)\cdot\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{5}{6}}+\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}\cdot x^{\frac{1}{2}}+\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{5}{6}}+\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}+\frac{1}{2}}+\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{5}{6}}+\left(-\frac{1}{3}\right)\cdot x^{-\frac{8}{6}+\frac{3}{6}}+\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{1}{2}\cdot x^{-\frac{5}{6}}+\left(-\frac{1}{3}\right)\cdot x^{-\frac{5}{6}}+\left(-\frac{1}{3}\right)\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{3}{6}\cdot x^{-\frac{5}{6}}-\frac{2}{6}\cdot x^{-\frac{5}{6}}-\frac{1}{3}\cdot x^{-\frac{4}{3}}$$

$$f'(x)=\frac{1}{6}\cdot x^{-\frac{5}{6}}-\frac{1}{3}\cdot x^{-\frac{4}{3}}$$

$$f'(x) = \frac{1}{6} \cdot x^{-\frac{5}{6}} - \frac{1}{3} \cdot x^{-\frac{4}{3}} = \frac{1}{6 \cdot \sqrt[6]{x^5}} - \frac{1}{3 \cdot \sqrt[4]{x^3}}$$

Drugi sposób

$$f(x) = \frac{\sqrt{x} + 1}{\sqrt[3]{x}}$$

$$f(x) = \frac{\sqrt{x}}{\sqrt[3]{x}} + \frac{1}{\sqrt[3]{x}}$$

$$f(x) = \frac{x^{\frac{1}{2}}}{x^{\frac{1}{3}}} + \frac{1}{x^{\frac{1}{3}}}$$

$$f(x) = x^{\frac{1}{2}} \cdot x^{-\frac{1}{3}} + 1 \cdot x^{-\frac{1}{3}} = x^{\frac{1}{2}} \cdot x^{-\frac{1}{3}} + x^0 \cdot x^{-\frac{1}{3}}$$

$$f(x) = x^{\frac{3}{6} - \frac{2}{6}} + x^{-\frac{1}{3}}$$

$$f(x) = x^{\frac{1}{6}} + x^{-\frac{1}{3}}$$

$$f'(x) = \frac{1}{6} \cdot x^{-\frac{5}{6}} - \frac{1}{3} x^{-\frac{4}{3}}$$

$$f'(x) = \frac{1}{6 \cdot \sqrt[6]{x^5}} - \frac{1}{3 \cdot \sqrt[4]{x^3}}$$