

$$y = \arccos^4 \frac{1}{4} \frac{\sqrt{4^x + x}}{x - \ln 2}$$

$$y' = 4 \cdot \arccos^3 \frac{1}{4} \frac{\sqrt{4^x + x}}{x - \ln 2} \cdot \left(- \frac{1}{\sqrt{1 - \frac{1}{16} \left(\frac{\sqrt{4^x + x}}{x - \ln 2} \right)^2}} \right) \cdot \frac{1}{\frac{\sqrt{4^x + x}}{x - \ln 2}}$$

$$\cdot \left(\frac{\sqrt{4^x + x}}{x - \ln 2} \right)' = 4 \arccos^3 \frac{1}{4} \frac{\sqrt{4^x + x}}{x - \ln 2} \cdot \left(- \frac{1}{\sqrt{1 - \frac{1}{16} \left(\frac{\sqrt{4^x + x}}{x - \ln 2} \right)^2}} \right)$$

$$\cdot \frac{x - \ln 2}{\sqrt{4^x + x}} \cdot \frac{(\sqrt{4^x + x})' \cdot (x - \ln 2) - (\sqrt{4^x + x})(x - \ln 2)'}{(x - \ln 2)^2}$$

$$= 4 \arccos^3 \frac{1}{4} \cdot \frac{\sqrt{4^x + x}}{x - \ln 2} \cdot \left(- \frac{1}{\sqrt{1 - \frac{1}{16} \left(\frac{\sqrt{4^x + x}}{x - \ln 2} \right)^2}} \right) \cdot \frac{x - \ln 2}{\sqrt{4^x + x}}$$

$$\cdot \frac{\frac{1}{2\sqrt{4^x + x}} \cdot (4^x \cdot \ln 4 + 1) - (\sqrt{4^x + x})(1 - 0)}{(x - \ln 2)^2} =$$

$$= 4 \arccos^3 \frac{1}{4} \cdot \frac{\sqrt{4^x + x}}{x - \ln 2} \cdot \left(- \frac{1}{\sqrt{1 - \frac{1}{16} \left(\frac{\sqrt{4^x + x}}{x - \ln 2} \right)^2}} \right) \cdot \frac{x - \ln 2}{\sqrt{4^x + x}}$$

$$\cdot \frac{\frac{1}{2\sqrt{4^x + x}} \cdot (4^x \cdot \ln 4 + 1) - (\sqrt{4^x + x})}{(x - \ln 2)^2}$$