WRITE YOUR NAME:

The equation $y^3 + y = x$ implicitly defines y as a function of x.

Verify that this function is a solution of the differential equation

$$y' = \frac{1}{3y^2 + 1}$$

$$y^3 + y = x$$

$$\frac{d}{dx}\left(y^3 + y\right) = \frac{d}{dx}(x)$$

$$3y^2 \cdot y' + y' = 1$$

$$\left(3y^2 + 1\right)y' = 1$$

$$y' = \frac{1}{3y^2 + 1}$$

Verified.