if Xsquareroot(1+Y)+Y squareroot(1+X)=0 then find dy/dx

Xsquareroot(1+Y)+Y squareroot(1+X)=0 => $x\sqrt{1+y} + y\sqrt{1+x} = 0$

find $d\left(x\sqrt{1+y} + y\sqrt{1+x}\right) = d(0)$

0 is constant, so d(0) = 0

$$d\left(x\sqrt{1+y} + y\sqrt{1+x}\right) = 0$$

The sum rule:

$$d\left(x\sqrt{1+y}\right) + d\left(y\sqrt{1+x}\right) = 0$$

The product rule (Leibniz rule):

$$\sqrt{1+y}dx + xd\left(\sqrt{1+y}\right) + \sqrt{1+x}dy + y\,d(\sqrt{1+x}) = 0$$

$$d\left(\sqrt{1+y}\right) = \frac{dy}{2\sqrt{1+y}}$$

Finally:

$$\sqrt{1+y}dx + x\frac{dy}{2\sqrt{1+y}} + \sqrt{1+x}dy + y\,\frac{dx}{2\sqrt{1+x}} = 0$$

Or:

$$dx\left(\sqrt{1+y} + \frac{y}{2\sqrt{1+x}}\right) = -dy\left(\sqrt{1+x} + \frac{x}{2\sqrt{1+y}}\right)$$

$$\frac{dy}{dx} = -\frac{\left(\sqrt{1+y}+\frac{y}{2\sqrt{1+x}}\right)}{\left(\sqrt{1+x}+\frac{x}{2\sqrt{1+y}}\right)}$$