quiz 14
math1117.02
u new haven
w 30 oct

name: Solution

1 (4 points each). For each of the following, solve for $\frac{dy}{dx}$

(a) $x + 2y = \sqrt{y}$

$$\frac{d}{dx}(x+2y) = \frac{d}{dx}(\sqrt{y})$$

$$1 + 2\frac{dy}{dx} = \frac{1}{2}y^{-1/2}\frac{dy}{dx}$$

$$\frac{dy}{dx} = \frac{1}{\frac{1}{2}y^{-1/2} - 2}$$

(b) $(xy+1)^3 = x - y^2 + 8$

$$\frac{d}{dx}(xy+1)^3 = \frac{d}{dx}(x - y^2 + 8)$$

$$3(xy+1)^2\frac{d}{dx}(xy+1) = 1 - 2y\frac{dy}{dx}$$

$$3(xy+1)^2\left(y + x\frac{dy}{dx}\right) = 1 - 2y\frac{dy}{dx}$$

$$3(xy+1)^2 y + 3x(xy+1)^2\frac{dy}{dx} = 1 - 2y\frac{dy}{dx}$$

$$\frac{dy}{dx} = \frac{1 - 3(xy+1)^2 y}{2y + 3x(xy+1)^2}$$