Name: Richard

QUIZ 13

MATH 200
October 3, 2025

1. Given the equation $x^2 + y^3 = \sin(y)$, find y'.

$x^2 + y^3 = \sin(y)$ $\quad$ $y = f(x)$

$D_x[x^2 + y^3] = D_x[\sin(y)]$

$2x + 3y^2 y' = \cos(y)\, y'$

$3y^2 y' - \cos(y)\, y' = -2x$

$y'(3y^2 - \cos(y)) = -2x$

$$y' = \boxed{\frac{-2x}{3y^2 - \cos(y)}}$$

$$= \boxed{\frac{2x}{\cos(y) - 3y^2}}$$

Name: Richard

QUIZ 13

MATH 200
October 2, 2025

1. Given the equation $x^3 + y = \cos(y)$, find y'.

$$x^3 + y = \cos(y)$$

$y = f(x)$

$$D_x\left[x^3 + y\right] = D_x\left[\cos(y)\right]$$

$$3x^2 + y' = -\sin(y)\, y'$$

$$y' + \sin(y)\, y' = -3x^2$$

$$y'(1 + \sin(y)) = -3x^2$$

$$\boxed{y' = \frac{-3x^2}{1 + \sin(y)}}$$