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Quiz 14

Find the derivatives of the functions below:

$$y = \sin(\cos x)$$
$$y = (2x^4 + 3x^3 + x^2 - 1)^4$$
$$(x^2 + y^2)^2 = 25(x^2 + y^2)$$
$$x \cos x^2 = y \sin^2 y$$

Solution

1:

$$y' = -\cos(\cos x) \sin x$$

2:

$$y' = 4(2x^4 + 3x^3 + x^2 - 1)^3(8x^3 + 9x^2 + 2x)$$

3:

$$2(x^2 + y^2)(2x + 2yy') = 25(2x + 2yy')$$

solving for y':

$$y' = -\frac{25x - 2x(x^2 + y^2)}{25y - 2y(x^2 + y^2)} = -\frac{x}{y}$$

4:

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