5. $2\tan(x)\cos(y) = 3$

$\frac{d}{dx}\left(\underbrace{2\tan x}_{P}\underbrace{\cos y}_{Q}\right) = \frac{d}{dx}(3)$

$P' = 2\sec^2 x \quad Q' = (-\sin y)\cdot y'$

$P'Q + PQ'$

$2\sec^2 x \cos y + 2\tan x(-\sin y)y' = 0$

$2\sec^2 x \cos y = 2\tan x \sin y\, y'$

$\frac{2\sec^2 x \cos y}{2\tan x \sin y} = \frac{2\tan x \sin y\, y'}{2\tan x \sin y}$

$\frac{\frac{1}{\cos x}\cdot\frac{1}{\cos x}\cdot\cos y}{\tan x \cdot \sin y} = y'$

$y' = \frac{\frac{1}{\cos x}\cdot\frac{1}{\cos x}}{\frac{\sin x}{\cos x}}\cdot\frac{\cos y}{\sin y}$

$y' = \frac{\cos x}{\sin x}\cdot\frac{1}{\cos x}\cdot\frac{1}{\cos x}\cdot\cot y$

$y' = \frac{1}{\sin x}\cdot\frac{1}{\cos x}\cdot\cot y$

$y' = \csc x \sec x \cot y$

6. $\ln(x^2 y^3) + 2x = 5$

$\ln x^2 + \ln y^3 + 2x = 5$

$2\ln x + 3\ln y + 2x = 5$

$\frac{d}{dx}(2\ln x) + \frac{d}{dx}(3\ln y) + \frac{d}{dx}(2x) = \frac{d}{dx}(5)$

$2\cdot\frac{1}{x} + 3\cdot\frac{1}{y}\cdot y' + 2 = 0$

$\frac{2}{x} + \frac{3y'}{y} + 2 = 0$

$xy\left(\frac{2}{x}\right) + xy\left(\frac{3y'}{y}\right) + xy(2) = xy(0)$

$2y + 3xy' + 2xy = 0$

$3xy' = -2y - 2xy$

$\frac{3xy'}{3x} = \frac{-2y - 2xy}{3x}$

$y' = \frac{-2y - 2xy}{3x}$