Calculus

Chapter 3: Differentiation

Lesson 5: Implicit Differentiation

Question #1

Reference Q.369

Find $\frac{dy}{dx}$ by implicit differentiation for:

$x^2 + y^2 = 64$

Question #2

Reference Q.370

Find $\frac{dy}{dx}$ by implicit differentiation for:

$x^3y + x^2y^2 = 7$.

Question #3

Reference Q.371

Find $\frac{dy}{dx}$ by implicit differentiation for: $2\cos(\sqrt{x}) + \frac{2}{\sqrt{y}} = 4$.

Question #4

Reference Q.372

Find $\frac{dy}{dx}$ by implicit differentiation for: $\cos\left(x^3y^2\right) = 2xy$.

Question #5

Reference Q.373

Find $\frac{d^2y}{d^2x}$ by implicit differentiation:

$y - \cos y = xy$

Question #6

Reference Q.374

Find $\frac{dy}{dx}$ by implicit differentiation:

$x^3 + 2xy + y^3 = 6$

Question #7

Reference Q.375

Find the the tangent line at the given point using implicit differentiation. $x^2 + y^2 = 1$ at the points $\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$.

Question #8

Reference Q.376

Use implicit differentiation to find $\frac{dx}{dy}$ (not $\frac{dy}{dx}$) when $y = \cos x$

Question #9

Reference Q.377

Find $\frac{dy}{dx}$ by implicit differentiation $x^2 + 2x\sin^{-1} y = e^{3y}$

Question #10

Reference Q.351

Use the laws of logarithms to simplify the expression and then take its derivative:

$\frac{d}{dx}\left(\ln\left((2x-1)^3(1+x^2)^5\right)\right)$

Question #11

Reference Q.352

Use the laws of logarithms to simplify the expression and then take its derivative of

$f(x) = \ln\frac{\sqrt{1-x^2}}{\sin x}$

Question #12

Reference Q.353

Use logarithmic differentiation to find $y = 8x(\cos x)^{x/3}$.

Question #13

Reference Q.354

Use logarithmic differentiation to find $\frac{dy}{dx}$ when $y = x^{x^2}$.

Question #14

Reference Q.9141

Find $\frac{dy}{dx}$, where $1 = y^2 + x - y^2 x$

Question #15

Reference Q.9166

Find y' if $y = x^{\sin x}$.

Question #16

Reference Q.9167

Find y' if $\frac{\ln y}{x} = \sin xy$