

19 Lecture - MTH101

Important Mcqs

What is the formula for finding the derivative of an implicit function?

- A. $dy/dx = f'(x)$
- B. $dx/dy = f'(y)$
- C. $dy/dx = -f'(x)/f'(y)$
- D. $dx/dy = -f'(y)/f'(x)$

Answer: C

What is the first step in implicit differentiation?

- A. Solve for x
- B. Solve for y
- C. Differentiate both sides with respect to x
- D. Differentiate both sides with respect to y

Answer: C

What is the derivative of y^2 with respect to x using implicit differentiation?

- A. $2y$
- B. $2xy$
- C. $2yx$
- D. 0

Answer: C

What is the derivative of $x^2 + y^2 = 25$ with respect to x using implicit differentiation?

- A. $dy/dx = -x/y$
- B. $dy/dx = -y/x$

C. $dy/dx = x/y$

D. $dy/dx = y/x$

Answer: A

What is the second derivative of $y^2 = x^3$ using implicit differentiation?

A. $d^2y/dx^2 = -2x/y$

B. $d^2y/dx^2 = -y/2x$

C. $d^2y/dx^2 = 2x/y$

D. $d^2y/dx^2 = y/2x$

Answer: B

What is the derivative of $\sin(x^2 + y^2)$ using implicit differentiation?

A. $\cos(x^2 + y^2)$

B. $2x \cos(x^2 + y^2)$

C. $2y \cos(x^2 + y^2)$

D. $2(x+y) \cos(x^2 + y^2)$

Answer: D

What is the derivative of $y^{(1/2)}$ using implicit differentiation?

A. $(1/2) y^{(-1/2)}$

B. $(1/2) y^{(1/2)}$

C. $(1/2) y^{(3/2)}$

D. $(1/2) y^{(2)}$

Answer: A

What is the derivative of $x^2y^3 + xy = 6$ using implicit differentiation?

A. $dy/dx = -2x/3y$

B. $dy/dx = -3y/2x$

C. $dy/dx = -2y/3x$

D. $dy/dx = -3x/2y$

Answer: C

What is the equation of the tangent line to $x^2 + y^2 = 16$ at the point $(3, -\sqrt{7})$ using implicit differentiation?

A. $y = 2x - \sqrt{7}$

B. $y = 2x + \sqrt{7}$

C. $y = -2x - \sqrt{7}$

D. $y = -2x + \sqrt{7}$

Answer: D

What is the derivative of $\ln(xy)$ using implicit differentiation?

A. $(1/x) + (1/y)$

B. $(y/x^2) + (x/y^2)$

C. $(1/y) + (x/y^2)$

D. $(1/x) + (y/x^2)$

Answer: C