15 Lecture - MTH101

Important Mcqs

What is the derivative of f(x) = x^2 at x = 3?

a) 3

b) 6

c) 9

d) 12

Answer: b) 6 (Using the power rule, f'(x) = 2x, so f'(3) = 2(3) = 6)

What is the derivative of f(x) = cos(x) at x = pi/4?

a) -1

b) -sin(pi/4)

c) cos(pi/4)

d) -cos(pi/4)

Answer: d) -cos(pi/4) (Using the chain rule, f'(x) = -sin(x), so f'(pi/4) = -sin(pi/4) = -cos(pi/4))

What is the derivative of f(x) = e^x at x = 0?

a) 0

b) 1

c) e

d) e^-1

Answer: b) 1 (Using the power rule, f'(x) = e^x, so f'(0) = e^0 = 1)

What is the derivative of f(x) = ln(x) at x = 1?

a) 0

b) 1

c) -1

d) undefined

Answer: b) 1 (Using the derivative of ln(x), f'(x) = 1/x, so f'(1) = 1/1 = 1)

What is the derivative of f(x) = 5x^4 - 3x^2 + 2x - 1?

a) 20x^3 - 6x + 2

b) 20x^3 - 6x^2 + 2

c) 20x^3 - 6x + 1

d) 20x^4 - 6x^2 + 2

Answer: a) 20x^3 - 6x + 2 (Using the power rule, f'(x) = 20x^3 - 6x^2 + 2)

What is the derivative of f(x) = sqrt(x) at x = 4?

a) 1/8

b) 1/4

c) 1/2

d) 2

Answer: b) 1/4 (Using the derivative of sqrt(x), f'(x) = 1/(2sqrt(x)), so f'(4) = 1/(2sqrt(4)) = 1/4)

What is the derivative of f(x) = sin(x) + cos(x) at x = pi/3?

a) -1/2

b) 0

c) 1/2

d) sqrt(3)/2

Answer: c) 1/2 (Using the sum rule and the derivative of sin(x) and cos(x), f'(x) = cos(x) - sin(x), so f'(pi/3) = cos(pi/3) - sin(pi/3) = 1/2 - sqrt(3)/2 = 1/2 - 1/2sqrt(3) = 1/2(1 - 1/sqrt(3)) = 1/2(1 - sqrt(3)/3) = 1/2 - sqrt(3)/6 = 1/2 - 0.289 = 0.211)

What is the derivative of f(x) = 1/x at x = 2?

a) -1/4

b