

16 Lecture - MTH101

Important Mcqs

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

a) $f'(x) = 3x^2 + 8x - 5$

b) $f'(x) = 3x^2 + 8x + 5$

c) $f'(x) = 3x^3 + 8x^2 - 5x - 2$

d) $f'(x) = 3x^2 + 4x - 5$

Solution: The derivative of $f(x)$ is $f'(x) = 3x^2 + 8x - 5$. Therefore, the correct answer is an option (a).

What is the derivative of $f(x) = \sin(x)\cos(x)$?

a) $f'(x) = \cos(x)\sin(x)$

b) $f'(x) = \cos^2(x) - \sin^2(x)$

c) $f'(x) = -\sin(x)\cos(x)$

d) $f'(x) = 2\cos(x)\sin(x)$

Solution: Using the product rule, we get $f'(x) = \cos(x)\cos(x) - \sin(x)\sin(x) = \cos^2(x) - \sin^2(x)$. Therefore, the correct answer is option (b).

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

a) $f'(x) = 12x^3 - 6x^2 + 10x - 4$

b) $f'(x) = 12x^3 - 6x^2 + 5x - 4$

c) $f'(x) = 3x^3 - 2x^2 + 5x - 4$

d) $f'(x) = 3x^3 - 2x^2 + 10x - 4$

Solution: The derivative of $f(x)$ is $f'(x) = 12x^3 - 6x^2 + 10x - 4$. Therefore, the correct answer is option (a).

What is the derivative of $f(x) = e^x \cos(x)$?

a) $f'(x) = e^x \sin(x)$

b) $f'(x) = e^x(\cos(x) + \sin(x))$

c) $f'(x) = e^x(\cos(x) - \sin(x))$

d) $f'(x) = e^x(\cos(x) - \cos(x))$

Solution: Using the product rule, we get $f'(x) = e^x \cos(x) - e^x \sin(x) = e^x(\cos(x) - \sin(x))$. Therefore, the correct answer is option (c).

What is the derivative of $f(x) = \ln(5x)$?

a) $f'(x) = 1/(5x)$

b) $f'(x) = 5\ln(x)$

c) $f'(x) = 5/(\ln(x))$

d) $f'(x) = 1/x$

Solution: Using the chain rule, we get $f'(x) = 1/(5x)$. Therefore, the correct answer is option (a).

What is the derivative of $f(x) = x^2 \ln(x)$?

a) $f'(x) = 2x \ln(x) + x$

b) $f'(x) = x \ln(x)$

c) $f'(x) = 2x \ln(x) + 2x$

d) $f'(x) = 2x \ln(x) + x^2$

Solution: Using (a)