

Quiz 3 MATH 2501 Fall 2018

Let $f(x) = 3x^5 + 4x^3 - 3x^2 + 2x - 17$. Use properties of the derivative to compute $f'(x)$.

Solution : $\frac{df}{dx} = \frac{d}{dx} [3x^5 + 4x^3 - 3x^2 + 2x - 17]$

derivative of the sum is the sum of derivatives $\rightarrow = \frac{d}{dx} [3x^5] + \frac{d}{dx} [4x^3] + \frac{d}{dx} [-3x^2] + \frac{d}{dx} [2x] + \frac{d}{dx} [-17]$

constant multiple rule $\rightarrow = 3 \frac{d}{dx} (x^5) + 4 \frac{d}{dx} (x^3) - 3 \frac{d}{dx} (x^2) + 2 \frac{d}{dx} (x) - 17 \frac{d}{dx} (1)$

power rule $\frac{d}{dx} x^n = nx^{n-1}$ $\rightarrow = 3(5x^4) + 4(3x^2) - 3(2x) + 2(1) - 17(0x^{-1})$

simplify $\rightarrow = 15x^4 + 12x^2 - 6x + 2$