

Semester work in mathematical analysis

Rustam Subkhankulov *

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*sponsored By A.Y.Petrovich

Original expression before simplifying:

$$\frac{\sin(x)-2\cdot(4-\frac{8}{2})}{10} \cdot (x-2)^3 \cdot \arccos(x)$$

Using 6.47 theorem we will have that derivative is:

$$\frac{\sin(x)}{10} \cdot (x-2)^3 \cdot \arccos(x)$$

Receiving signals from space, we get an intermediate result after simplification:

$$\frac{\sin(x)}{10} \cdot (x-2)^3 \cdot \arccos(x)$$

Differentiation by x

Derivative is: :

$$\left(\frac{1 \cdot \cos(x) \cdot 1 \cdot 10 - \sin(x) \cdot 0}{10^2} \cdot (x-2)^3 + \frac{\sin(x)}{10} \cdot (1-0) \cdot 3 \cdot (x-2)^2 \right) \cdot \arccos(x) + \frac{\sin(x)}{10} \cdot (x-2)^3 \cdot 1 \cdot \frac{-1}{(1-x^2)^{0.5}}$$

Using 5.18 theorem we will have that derivative is:

$$\left(\frac{\cos(x) \cdot 10}{100} \cdot (x-2)^3 + \frac{\sin(x)}{10} \cdot 3 \cdot (x-2)^2 \right) \cdot \arccos(x) + \frac{\sin(x)}{10} \cdot (x-2)^3 \cdot \frac{-1}{(1-x^2)^{0.5}}$$

Results after differentiation and simplification: $\left(\frac{\cos(x) \cdot 10}{100} \cdot (x-2)^3 + \frac{\sin(x)}{10} \cdot 3 \cdot (x-2)^2 \right) \cdot \arccos(x) + \frac{\sin(x)}{10} \cdot (x-2)^3 \cdot \frac{-1}{(1-x^2)^{0.5}}$