

# Semester work in mathematical analysis

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November 2021

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**Original expression before simplifying:**

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

**Using 7.1 theorema 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 6.9 theorema 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:**  $\left( \frac{\cos(x) \cdot 10}{100} \cdot (x-2)^3 + \frac{\sin(x)}{10} \cdot 3 \cdot (x-2)^2 \right) \cdot \arccos(x) + \frac{\sin(x)}{10} \cdot (x-2)^3 \cdot \frac{-1}{(1-x^2)^{0.5}}$