Maclaurin Series

The power series

$$f(x) = f(0) + f'(0)x + \frac{f''(0)}{2!}x^2 + \frac{f'''(0)}{3!}x^3 + \cdots\cdots$$

is known as Maclaurin series of the function $f(x)$

3. Show that the Maclaurin series up to term in x^4 for $\ln(1+\sin x)$ is

$$x - \frac{x^2}{2} + \frac{x^3}{6} - \frac{x^4}{12}$$

Answer:

$$f(x) = \ln(1+\sin x) \Rightarrow f(0) = 0$$
$$f'(x) = (1+\sin x)^{-1}\cos(x) \Rightarrow f(0) = 1$$
$$f''(x) = -$$
$$f'''(x) =$$
$$f^{iv}(x) =$$