

Problem Set 2

Find the first $f'(x)$ derivative of the function $f(x)$ where

1. $f(x) = x \cos(x)$

2. $f(x) = x^2 \cos(kx)$, $k = \text{const}$

3. $f(x) = 2\sqrt{x} \cos(kx)$, $k = \text{const}$

4. $f(x) = x^3 + ax + \exp(kx)$, $a = \text{const}$, $k = \text{const}$

5. $f(x) = \exp(-kx) + \sin(x) - x^4$, $k = \text{const}$

6. $f(x) = \frac{1}{\sqrt{2\pi}} (\cos(kx) + \sin(kx))$, $k = \text{const}$