Copy the Product Rule from page 118 below. Most calculus students find that the verbal description of the Product Rule is a helpful mnemonic device.

**THEOREM 2.7 The Product Rule**

The product of two differentiable functions, \( f \) and \( g \), is itself differentiable. Moreover, the derivative of \( fg \) is

\[
\frac{d}{dx} [f(x)g(x)] = \text{______________________________}
\]

Study Examples 1-3 on page 119 and then try these problems. Show all steps.

1. \( f(x) = x^2 \cos x \)

2. \( g(x) = (3x - 2)(5x^3 - 4) \)