Study guide for quiz 08

Quiz problems include both the lecture contents and homework problems.

1. Section 14.4: Study the Chain rule for composition of differentiable functions of one or more independent variables (along with one or more intermediate variables) such as Theorem 5 (1 independent, 2 intermediate variables), Theorem 6 (1 independent, 3 intermediate variables), Theorem 7 (2 independent, 3 intermediate variables) and so on for more general cases.

2. Section 14.4: Study how to evaluate

$$\frac{d}{dx}\int_{g_1(x)}^{g_2(x)} f(x,t)\,dt.$$

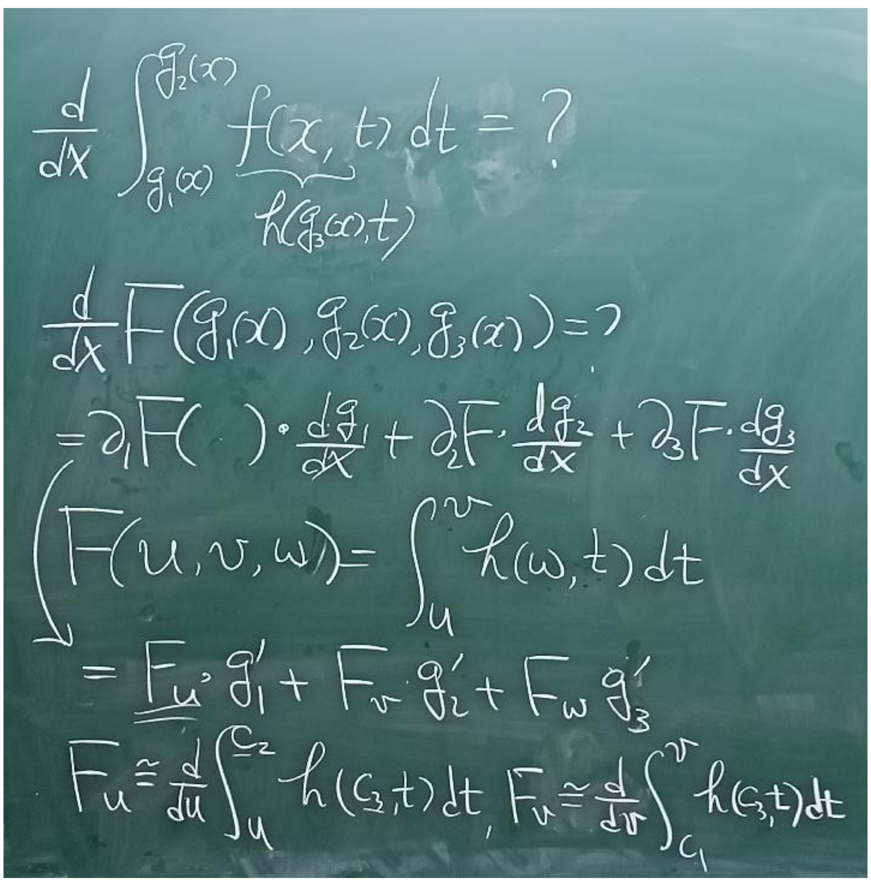

Figure 1: Guide to item 2

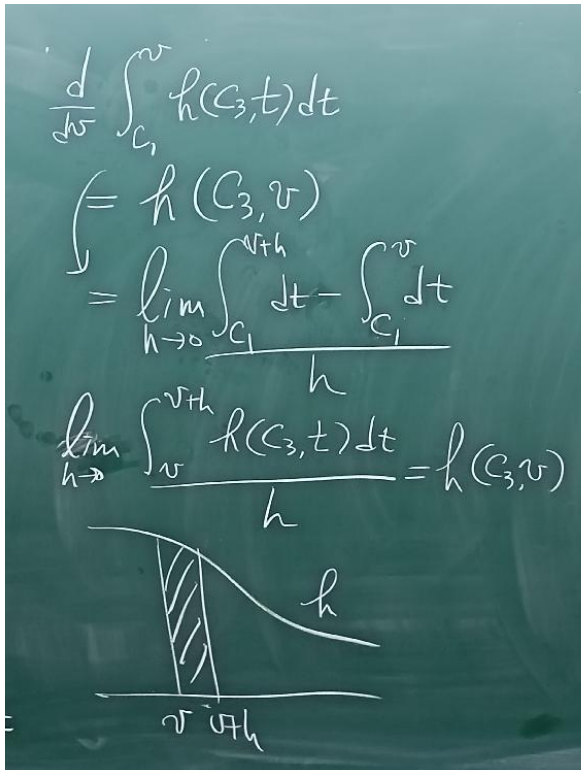

Figure 2: Guide to item 2, continued

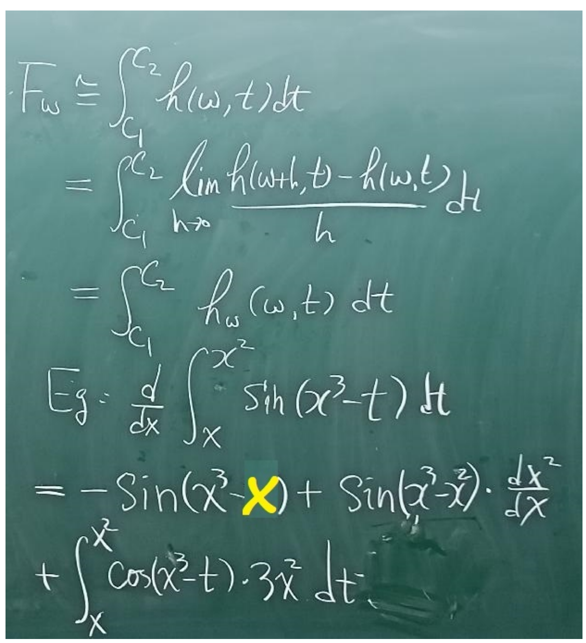

Figure 3: Guide to item 2, continued

3. Section 14.5: Study the definition of directional derivative and how to compute it from definition, and alternatively how to compute it using partial derivatives when the

function is differentiable.

4. Section 14.5: Study the geometric meaning of the gradient vector. Study how to find the tangent line and normal line of a level curve of $f(x, y)$ (i.e., $\{(x, y) \mid f(x, y) = c\}$) using gradient of f.