

(1) [5] Evaluate  $\int_1^4 \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$ .

(2) [5] Determine  $\int \frac{a + bx^3}{4ax + bx^4} dx$ .

(3) [5] Determine  $F''(2)$  if

$$F(x) = \int_1^x f(t) dt \quad \text{and} \quad f(t) = \int_1^{t^2} \frac{\sqrt{1+u^3}}{u} du$$