$$\Rightarrow \quad u(x) = c_0 + c_1 x - \int_0^x F(y)\,dy$$

Ositt. int:

$$\int_0^x F(y)\,dy = \Big/_0^x y\,F(y) - \int_0^x y\,F'(y)\,dy$$

$$= x\,F(x) - \int_0^x y\,f(y)\,dy$$

$$= x \int_0^x f(y)\,dy - \int_0^x y\,f(y)\,dy$$

$$= \int_0^x (x-y)\,f(y)\,dy.$$

Siis:

$$u(x) = c_0 + c_1 x - \int_0^x (x-y)\,f(y)\,dy$$

$$0 = u(0) = c_0$$

$$0 = u(1) = c_1 - \int_0^1 (1-y)\,f(y)\,dy$$

$$\Rightarrow \quad c_1 = \int_0^1 (1-y)\,f(y)\,dy.$$

Ratkaisu saadaan siis muotoon:

$$u(x) = \underbrace{x \int_0^1 (1-y)\,f(y)\,dy}_{\int_0^x \; + \; \int_x^1} - \int_0^x (x-y)\,f(y)\,dy$$

$$= \int_0^x \underbrace{\big(x(1-y) - (x-y)\big)}_{y(1-x)} f(y)\,dy + \int_x^1 x(1-y)\,f(y)\,dy$$