STEP/Integration Q2 (21/6/23)

How to convert from:

(i) $\int_0^\infty f(x)dx$ to $\int_\infty^0 g(x)dx$

(ii) $\int_0^a f(x)dx$ to $\int_a^0 g(x)dx$

Solution

(i) $\int_0^\infty f(x)dx$ to $\int_\infty^0 g(x)dx$

Let $u = \dfrac{1}{x}$

(ii) $\int_0^a f(x)dx$ to $\int_a^0 g(x)dx$

Let $u = a - x$