where $A_0, \ldots, A_{m_1-1}$ *are arbitrary constants and the functions* ϕ_1, $\{C_k\}_{k=0}^{m_1-1}$ *and* f_{m_1} *are defined by the formulas*

$$\phi_1(x) = \int_c^x \frac{b_1(t)}{a_1(t)}\,dt,\ C_0(x) = 1,\ f_{m_1}(x) = \frac{1}{(m_1-1)!}\int_c^x (x-t)^{m_1-1}\frac{f(t)}{a_1(t)}\,dt$$

and for $k \geqslant 1$,

$$C_k(x) = \frac{1}{(k-1)!}\int_c^x \frac{(x-t)^{k-1}}{a_1(t)}\,dt.$$

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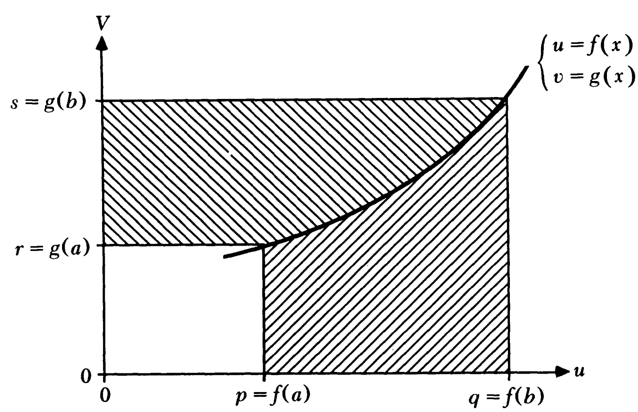
Proof without Words: Integration by Parts



Area + Area $= qs - pr$

$$\int_r^s u\,dv + \int_p^q v\,du = uv\Big|_{(p,r)}^{(q,s)}$$

$$\int_a^b f(x)g'(x)\,dx = f(x)g(x)\Big|_a^b - \int_a^b g(x)f'(x)\,dx$$

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