Uppgift A5.6c

$$\int \sqrt{1+\sqrt{x}}dx = \begin{bmatrix} t=\sqrt{x} \\ t^2 = x \\ 2tdt = dx \end{bmatrix} = \int 2t\sqrt{1+t}dt = \begin{bmatrix} s=\sqrt{1+t} \\ s^2 = 1+t \\ 2sds = dt \end{bmatrix} = \int 4s(s^2-1)sds =$$
$$= \int (4s^4 - 4s^2)ds = \frac{4}{5}s^5 - \frac{4}{3}s^3 + C = \frac{4}{5}(1+t)^{5/2} - \frac{4}{3}(1+t)^{3/2} + C =$$
$$= \frac{4}{5}\left(1+\sqrt{x}\right)^{5/2} - \frac{4}{3}\left(1+\sqrt{x}\right)^{3/2} + C.$$

Anmärkning. Primitiven kan också skrivas

$$\frac{4}{5}\left(1+\sqrt{x}\right)^{5/2} - \frac{4}{3}\left(1+\sqrt{x}\right)^{3/2} + C = \left(1+\sqrt{x}\right)^{3/2}\left[\frac{4}{5}\left(1+\sqrt{x}\right) - \frac{4}{3}\right] + C =$$
$$= \frac{4}{15}\left(1+\sqrt{x}\right)^{3/2}\left[3\left(1+\sqrt{x}\right) - 5\right] + C = \frac{4}{15}\left(1+\sqrt{x}\right)^{3/2}\left[3\sqrt{x} - 2\right] + C.$$