Ex 1 n)

$$\int \frac{dx}{4\sin x + 3\cos x}$$

$$= \int \frac{\frac{2}{1+t^2}\, dt}{4 \cdot \frac{2t}{1+t^2} + 3 \cdot \frac{1-t^2}{1+t^2}}$$

$$= \int \frac{2\, dt}{8t + 3 - 3t^2}$$

$$= \int \left[\frac{1}{5\,(3-t)} + \frac{3}{5\,(1+3t)} \right]\, dt$$

$$= -\frac{1}{5}\ln|3-t| + \frac{1}{5}\ln|1+3t| + C$$

$$= \frac{1}{5}\ln\left| \frac{1 + 3\tan\frac{x}{2}}{3 - \tan\frac{x}{2}} \right| + C$$