FORMULA 2.148.1

$$\int \frac{dx}{x^m(1+x^2)^n} = -\frac{1}{m-1}\frac{1}{x^{m-1}(1+x^2)^{n-1}} - \frac{2n+m-3}{m-1}\int \frac{dx}{x^{m-2}(1+x^2)^n}$$

for $m = 1$

$$\int \frac{dx}{x(1+x^2)^n} = \frac{1}{2n-2}\frac{1}{(1+x^2)^{n-1}} + \int \frac{dx}{x(1+x^2)^{n-1}}$$

For $m = 1$ and $n = 1$

$$\int \frac{dx}{(1+x^2)} = \ln \frac{x}{\sqrt{1+x^2}}$$