Theorem The standard Cauchy distribution is a special case of the Cauchy distribution when $a = 0$ and $\alpha = 1$.

Proof The Cauchy distribution has probability density function

$$f(x) = \frac{1}{\alpha\pi\left(1 + \left(\frac{x-a}{\alpha}\right)^2\right)} \qquad\qquad -\infty < x < \infty.$$

When $a = 0$ and $\alpha = 1$, this becomes

$$f(x) = \frac{1}{\pi\left(1 + x^2\right)} \qquad\qquad -\infty < x < \infty,$$

which is the probability density function of the standard Cauchy distribution.

APPL verification: The APPL statements

```
CauchyRV(0,1);
StandardCauchyRV();
```

yield the same probability density function.