Theorem: The Laplace(α_1, α_2) distribution is a special case of the error(a, b, c) distribution when $a = 0$, $b = \alpha/2$, and $c = 2$.

Proof: Let the random variable X have the error(a, b, c) distribution with probability density function

$$f(x) = \frac{\exp\left[-\left(|x-a|/b\right)^{2/c}/2\right]}{b(2^{c/2+1})\Gamma(1+c/2)} \qquad -\infty < x < \infty.$$

When $a = 0$, $b = \alpha/2$, and $c = 2$ we have

$$\begin{aligned} f(x) &= \frac{\exp\left[-\left(|x|/(\alpha/2)\right)/2\right]}{(\alpha/2)(2^2)\Gamma(2)} \\ &= \frac{e^{-|x|/\alpha}}{2\alpha} \\ &= \begin{cases} \frac{1}{2\alpha}e^{x/\alpha} & x < 0 \\ \frac{1}{2\alpha}e^{-x/\alpha} & x > 0, \end{cases} \end{aligned}$$

which is the probability density function of the Laplace(α_1, α_2) distribution, where $\alpha_1 = \alpha_2$.

APPL verification: The APPL statements

```
a := 0;
b := alpha / 2;
c := 2;
X := [[x -> exp(-(abs(x - a) / b) ^ (2 / c) / 2) / (b * (2 ^ (c / 2 + 1)) *
          Gamma(1 + c / 2))], [-infinity, infinity], ["Continuous", "PDF"]];
simplify(X[1][1](x));
```

yield the probability density function of a Laplace(α_1, α_2) random variable

$$f_Y(y) = \begin{cases} \frac{1}{2\alpha}e^{x/\alpha} & x < 0 \\ \frac{1}{2\alpha}e^{-x/\alpha} & x > 0. \end{cases}$$