Theorem The triangular distribution is a special case of the TSP distribution when $n = 2$.

Proof The TSP distribution has probability density function

$$f(x) = \begin{cases} \frac{n}{b-a}\left(\frac{x-a}{m-a}\right)^{n-1} & a < x < m \\ \frac{n}{b-a}\left(\frac{b-x}{b-m}\right)^{n-1} & m \leq x < b. \end{cases}$$

When $n = 2$ this probability density function becomes

$$\begin{aligned} f(x) &= \begin{cases} \frac{2}{b-a}\left(\frac{x-a}{m-a}\right)^{2-1} & a < x < m \\ \frac{2}{b-a}\left(\frac{b-x}{b-m}\right)^{2-1} & m \leq x < b \end{cases} \\ &= \begin{cases} \frac{2(x-a)}{(b-a)(m-a)} & a < x < m \\ \frac{2(b-x)}{(b-a)(b-m)} & m \leq x < b, \end{cases} \end{aligned}$$

which is the probability density function of the triangular distribution where $m = c$.

APPL verification: The APPL statements

```
assume(a < m);
assume(m < b);
TSPRV := [[x -> (n / (b - a)) * ((x - a) / (m - a)) ^ (n - 1),
           x -> (n / (b - a)) * ((b - x) / (b - m)) ^ (n - 1)],
          [a, m, b], ["Continuous", "PDF"]]:
subs(n = 2, TSPRV);
TriangularRV(a, m, b);
```

yield the probability density function of a triangular(a, m, b) random variable.