Properties of the Gamma Function

$$\Gamma(1+n) = n!$$

$$\Gamma(1+z) = z\Gamma(z)$$

$$\Gamma^*(z) = \Gamma(z^*)$$

$$\Gamma\left(\frac{1}{2}\right) = \sqrt{\pi}$$

$$\Gamma(z)\Gamma(1-z) = \frac{\pi}{\sin \pi z}$$

$$\Gamma\left(\frac{1}{2}+z\right)\Gamma\left(\frac{1}{2}-z\right) = \frac{\pi}{\cos \pi z}$$

$$\Gamma(z)\Gamma\left(z+\frac{1}{2}\right) = \sqrt{2\pi}\,2^{-2z+\frac{1}{2}}\,\Gamma(2z)$$