

### [gex3] Relation between Gamma and Beta functions

The goal of this exercise is to establish the relation

$$B(m, n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)},$$

between the Gamma and Beta functions as defined by the integral representations,

$$\Gamma(m) = \int_0^\infty dt e^{-t} t^{m-1}, \quad B(m, n) = \int_0^1 dx x^{m-1} (1-x)^{n-1}.$$

**Solution:**