



## Formulae and constants

### Mathematical constants

$$\sqrt{2} = 1.414...$$

$$\sqrt{3} = 1.732...$$

$$\sqrt{5} = 2.236...$$

$$\text{Eulers constant: } e = 2.718...$$

$$\text{Golden ratio: } \varphi_g = 1.618...$$

$$\text{Pi: } \pi = 3.141...$$

### Values of Euler's Gamma function $\Gamma(x)$

(The Gamma function is not the Gamma distribution.)

$$\Gamma(1) = \Gamma(2) = 1$$

$$\Gamma(3) = 2$$

$$\Gamma(\pi) = 2.288...$$

$$\Gamma(1.5) = \sqrt{\pi}/2$$

$$\Gamma(2.5) = \frac{3}{4}\sqrt{\pi}$$

### Integrals related to Gaussians

$$\int_{-\infty}^{+\infty} e^{-a(x+b)^2} dx = \sqrt{\frac{\pi}{a}} \quad (0.1)$$

$$\int e^{-ax^2} dx = \sqrt{\frac{\pi}{4a}} \operatorname{erf}(\sqrt{a}x) \quad (0.2)$$