

# Incomplete Gamma Function

1

$$P(a, x) \equiv \frac{\gamma(a, x)}{\Gamma(a)} \equiv \frac{1}{\Gamma(a)} \int_0^x e^{-t} t^{a-1} dt \quad (a > 0)$$

$$Q(a, x) \equiv 1 - P(a, x) \equiv \frac{\Gamma(a, x)}{\Gamma(a)} \equiv \frac{1}{\Gamma(a)} \int_x^\infty e^{-t} t^{a-1} dt \quad (a > 0)$$

$$\gamma(a, x) = e^{-x} x^a \sum_{n=0}^{\infty} \frac{\Gamma(a)}{\Gamma(a+1+n)} x^n$$

**gser(a, x)**

$$\Gamma(a, x) = e^{-x} x^a \left( \frac{1}{x+1-a} - \frac{1 \cdot (1-a)}{x+3-a} + \frac{2 \cdot (2-a)}{x+5-a} - \dots \right) \quad (x > 0)$$

**gcf(a, x)**