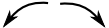


$$f_Y(y)dy = \frac{1}{\beta^\alpha} \frac{1}{\Gamma(\alpha)} (\beta y)^{\alpha-1} e^{-\frac{\beta y}{\beta}} d(\beta y)$$

$$= \frac{1}{\cancel{\beta^\alpha}} \frac{1}{\Gamma(\alpha)} \cancel{\beta^{\alpha-1}} y^{\alpha-1} e^{-y} \cancel{\beta} dy$$


$$= \underbrace{\frac{1}{\Gamma(\alpha)} y^{\alpha-1} e^{-y}}_{\text{standard gamma}} dy$$

standard gamma