

Задание Пусть $X \perp Y$ и $X \in \mathbb{N}^+$ и $Y \in \mathbb{N}^+$. Доказа $g_{X+Y}(s) = g_X(s) g_Y(s)$

Доказ $g_{X+Y}(s) = \mathbb{E} s^{X+Y} = \sum_{i=0}^{\infty} \sum_{j=0}^{\infty} s^{X_j+Y_i} P(X=j \cap Y=i) = \sum_{i=0}^{\infty} \sum_{j=0}^{\infty} s^j s^i P(X=j) P(Y=i) =$

$= \sum_{i=0}^{\infty} s^i P(Y=i) \sum_{j=0}^{\infty} s^j P(X=j) = \mathbb{E} s^Y \mathbb{E} s^X = g_X(s) g_Y(s) \quad \#$

