

rectangle partition

$$m_1 \geq m_2 \geq \dots \geq m_r \geq 0$$

$$\# \frac{m_1 \geq m_2 \geq \dots \geq m_r \geq 0}{m_1 \leq k} = \begin{bmatrix} k+r \\ r \end{bmatrix}$$

$$k_0 = k - m_1 \geq 0$$

$$k_1 = m_1 - m_2 \geq 0$$

$$k_2 = m_2 - m_3 \geq 0$$

$$k_{r-1} = m_{r-1} - m_r \geq 0$$

$$k_r = m_r \geq 0$$

$$k_0 + k_1 + \dots + k_r = k$$