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ST2054

Q1 (a)

(i) We need Θ^2 coefficient

(1) for $n = 1$ we have:

$$\frac{1}{k_1} \Theta^2$$

$$= k_1 \Theta$$

(2) for $n = 1$:

$$\frac{1}{k_1} \left(\sum_{k=1}^{\infty} \frac{1}{k!} m_k \Theta^k \right)$$

for $k = 1$:

$$\frac{1}{m_1} \Theta$$

$$= m_1 \Theta$$

method

$$k_1 \Theta = m_1 \Theta$$

$$k_1 = m_1$$

(ii)

Θ^2 coefficient

(1) for $n = 2$:

$$\frac{1}{k_2} \Theta^2$$

(2)

for $n = 1, k = 2$:

$$\frac{1}{m_2} \Theta^2$$

for $n = 2$:

$$\frac{1}{k_1} \left(\sum_{k=1}^{\infty} \frac{1}{k!} m_k \Theta^k \right)$$