

$$f = g \quad (1a)$$

$$f' = g' \quad (1b)$$

$$\mathcal{L}f = \mathcal{L}g \quad (1c)$$

$$f = g \quad (2i)$$

$$f' = g' \quad (2ii)$$

$$\mathcal{L}f = \mathcal{L}g + K \quad (2iii)$$

Note the relationship between (1) and (2): only 1c and 2iii differ.