Page 220, equation (4.361)

The Gibbs-Duhem equation (4.221) in a two-component mixture reads as follows:

$$w_1 \frac{\partial \tilde{g}_1}{\partial w_1} + w_2 \frac{\partial \tilde{g}_2}{\partial w_1} = 0$$

which enables to express the second partial derivative with the aid of the first one:

$$-\frac{\partial \tilde{g}_2}{\partial w_1} = \frac{w_1}{w_2} \frac{\partial \tilde{g}_1}{\partial w_1}. \tag{1}$$

Using (1), equation (4.359) can be rewritten

$$\frac{\partial \tilde{g}_1}{\partial w_1} - \frac{\partial \tilde{g}_2}{\partial w_1} = \frac{\partial \tilde{g}_1}{\partial w_1} \left(1 + \frac{w_1}{w_2}\right) > 0. \tag{2}$$

Because mass fractions are positive, (4.361) follows from (2) immediately.