

11.5 Expanding $(A + B)^{-1}$.

Multiplying this identity from the right with $A + B$ gives

$$1 = 1 - \frac{1}{A}B - \frac{1}{A}B \left(1 - \frac{1}{A}B\right) + \frac{1}{A}B \frac{1}{A}B \left(1 - \frac{1}{A}B\right) - \dots = 1.$$

Multiplying out the brackets, we see that consecutive pairs cancel.