

5.2 (b) (v)

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$f, g, h \in \ell^1(\mathbb{Z})$:

$$(f * g) * h = \left(\sum_{\ell \in \mathbb{Z}} f(\ell) \cdot g(k - \ell) \right) * h(k)$$

$$= f(k) * \left(\sum_{\ell \in \mathbb{Z}} g(\ell) \cdot h(k - \ell) \right) = f * (g * h)$$

$\ell^1(\mathbb{Z})$ is unital

e missing, non unital algebra missing