

Details for Axler 7.7, p. 207

$$(a) \quad \text{Kernel } T^* = (\text{Image } T)^\perp$$

$$(b) \quad \text{Image } T^* = (\text{Kernel } T)^\perp$$

$$(c) \quad \text{Kernel } T = (\text{Image } T^*)^\perp$$

$$(d) \quad \text{Image } T = (\text{Kernel } T^*)^\perp$$

(a) is done in detail in Axler.

(a) \Rightarrow (d) Take \perp of both sides.

(a) \Rightarrow (c) Substitute T^* for T .

(d) = (b) DITTO,