

7.9

$$\begin{aligned} 1) \quad (a) \quad (\lambda f)(u+v) &= \lambda f(u+v) = \lambda (f(u) + f(v)) = \lambda f(u) + \lambda f(v) \\ &= (\lambda f)(u) + (\lambda f)(v) \end{aligned}$$

$$\begin{aligned} (b) \quad (\lambda f)(\alpha \cdot u) &= \lambda f(\alpha \cdot u) = \lambda (\alpha \cdot f(u)) = \alpha \lambda f(u) = \alpha (\lambda f(u)) \\ &= \alpha \cdot (\lambda f)(u) \end{aligned}$$

$$2) \quad (\lambda f)(u) = \lambda f(u) = \lambda (A u) = (\lambda A) u$$