7.9 1) (a) $\big(\lambda\, f\big)(u+v) = \lambda\, f(u+v) = \lambda\,\big(f(u)+f(v)\big) = \lambda\, f(u) + \lambda\, f(v)$
$= \big(\lambda\, f\big)(u) + \big(\lambda\, f\big)(v)$

(b) $\big(\lambda\, f\big)(\alpha\cdot u) = \lambda\, f(\alpha\cdot u) = \lambda\,\big(\alpha\cdot f(u)\big) = \alpha\,\lambda\, f(u) = \alpha\,\big(\lambda\, f(u)\big)$
$= \alpha\cdot\big(\lambda\, f\big)(u)$

2) $\big(\lambda\, f\big)(u) = \lambda\, f(u) = \lambda\,(\mathrm{A}\, u) = (\lambda\,\mathrm{A})\, u$