**Problem 3.40**

(a) Refrigerant 134a; \( p = 140 \text{ lb/ft}^2 \), \( h = 100 \text{ Btu/lb} \)
from [Table A-11E]; \( h_f < h < h_g \)

\[ x = \frac{h - h_f}{h_g - h_f} = \frac{100 - 44.43}{70.52} = 0.788 \]

\[ u = u_f + x(u_g - u_f) = 0.01386 + (0.788)(0.3358 - 0.01386) = 0.2675 \text{ ft}^2/\text{lbf} \]

\[ T = T_{sat} = 100.56^\circ F \]

(b) Ammonia; \( T = 0^\circ F \), \( u = 15 \text{ ft}^2/\text{lbf} \)
from [Table A-13E]; \( v_g = 9.1100 \text{ ft}^3/\text{lbf} \)

\( u > u_g \Rightarrow \text{superheated vapor} \)

Interpolating in [Table A-15E]: \( p = 18.85 \text{ lb/ft}^2 \)

\[ h = 615.2 \text{ Btu/lb} \]

(c) Refrigerant 22; \( T = 30^\circ F \), \( u = 1.2 \text{ ft}^2/\text{lbf} \)
from [Table A-7E]; \( v_g = 0.7804 \text{ ft}^3/\text{lbf} \)

\( u > u_g \Rightarrow \text{superheated vapor} \)

Interpolating in [Table A-9E]: \( p = 47.60 \text{ lb/ft}^2 \)

\[ h = 108.80 \text{ Btu/lb} \]

**Problem 3.41**

(a) See Solution to Problem 3.39 for table-lookup data. Use these to check IT results.

(b) See Solution to Problem 3.40 for table-lookup data. Use these to check IT results.