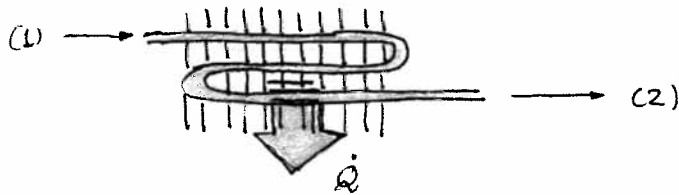


example Condenser



- Given:
- \dot{m}_{ref}
 - Steady-state
 - T_1, P_1 vapor phase
 - T_2, P_2 liquid phase

Find: \dot{Q} FROM REFRIGERANT TO SURROUNDING AIR

Analysis:

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



PROPERTIES

CHARACTERISTICS of A SYSTEM

- INDEPENDENT of _____
- _____ FUNCTION NOT A _____ FUNCTION

★ RECALL STATE POSTULATE FOR A SIMPLE COMPRESSIBLE SUBSTANCE

PROPERTIES NEEDED TO
FIX THE STATE.

FUN WITH THE P-V-T SURFACE

FIND THESE SINGLE PHASE REGIONS →

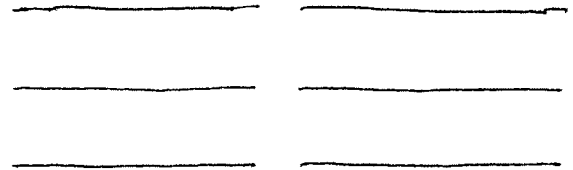
SOLID
LIQUID
VAPOR

FIND THESE TWO-PHASE REGIONS →

LIQUID - VAPOR
LIQUID - SOLID
SOLID - VAPOR

PROCESS →

← PROCESS



FIND THESE THINGS →

CRITICAL POINT:

TRIPLE LINE:

THE P-T DIAGRAM

DRAW THE PROJECTION OF THE P-V-T SURFACE IN THE P-T PLANE

- WHAT HAPPENED TO THE TWO-PHASE REGIONS?
- WHAT DOES THIS MEAN ABOUT P&T DURING PHASE CHANGE?

P-V DIAGRAM

DRAW THE PROJECTION OF THE P-V-T SURFACE IN THE P-V PLANE. INCLUDE THE CRITICAL POINT & LINES of CONSTANT TEMPERATURE

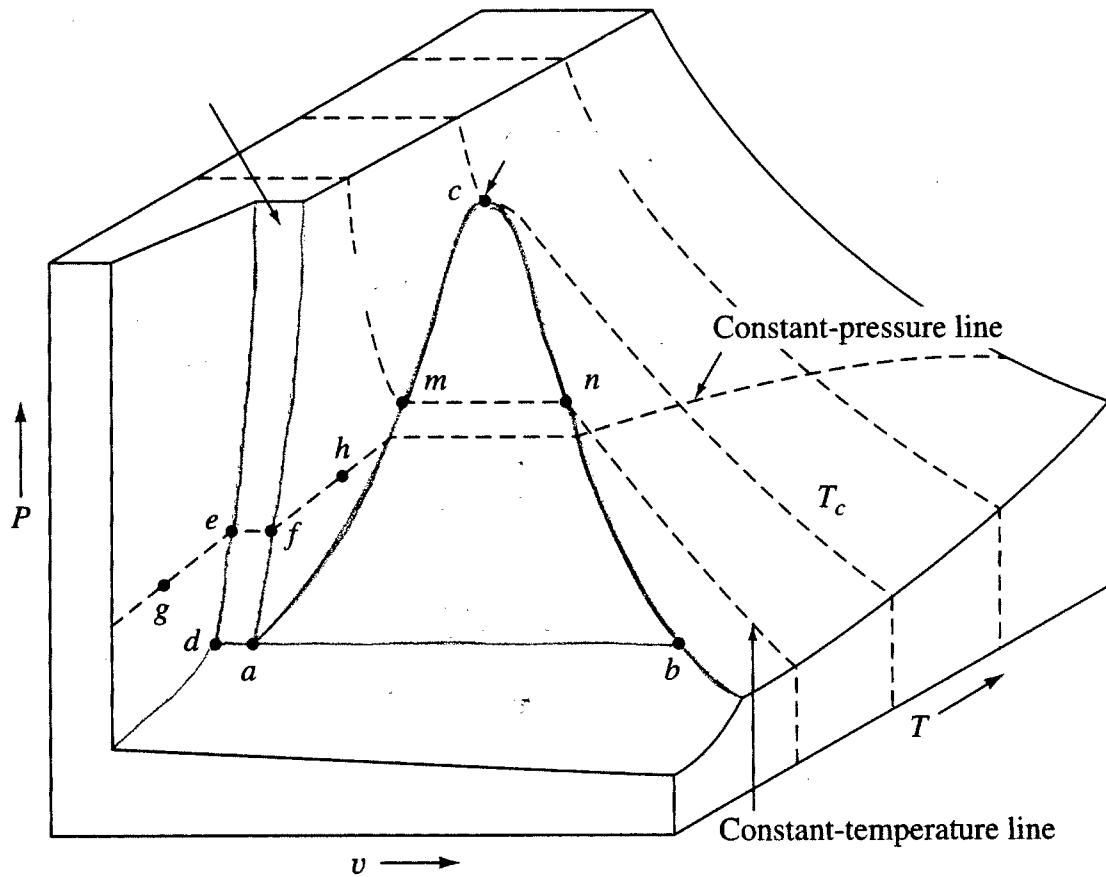
T-V DIAGRAM

DRAW THE PROJECTION OF THE P-V-T SURFACE IN THE T-V PLANE. INCLUDE THE CRITICAL POINT & LINES of CONSTANT PRESSURE.



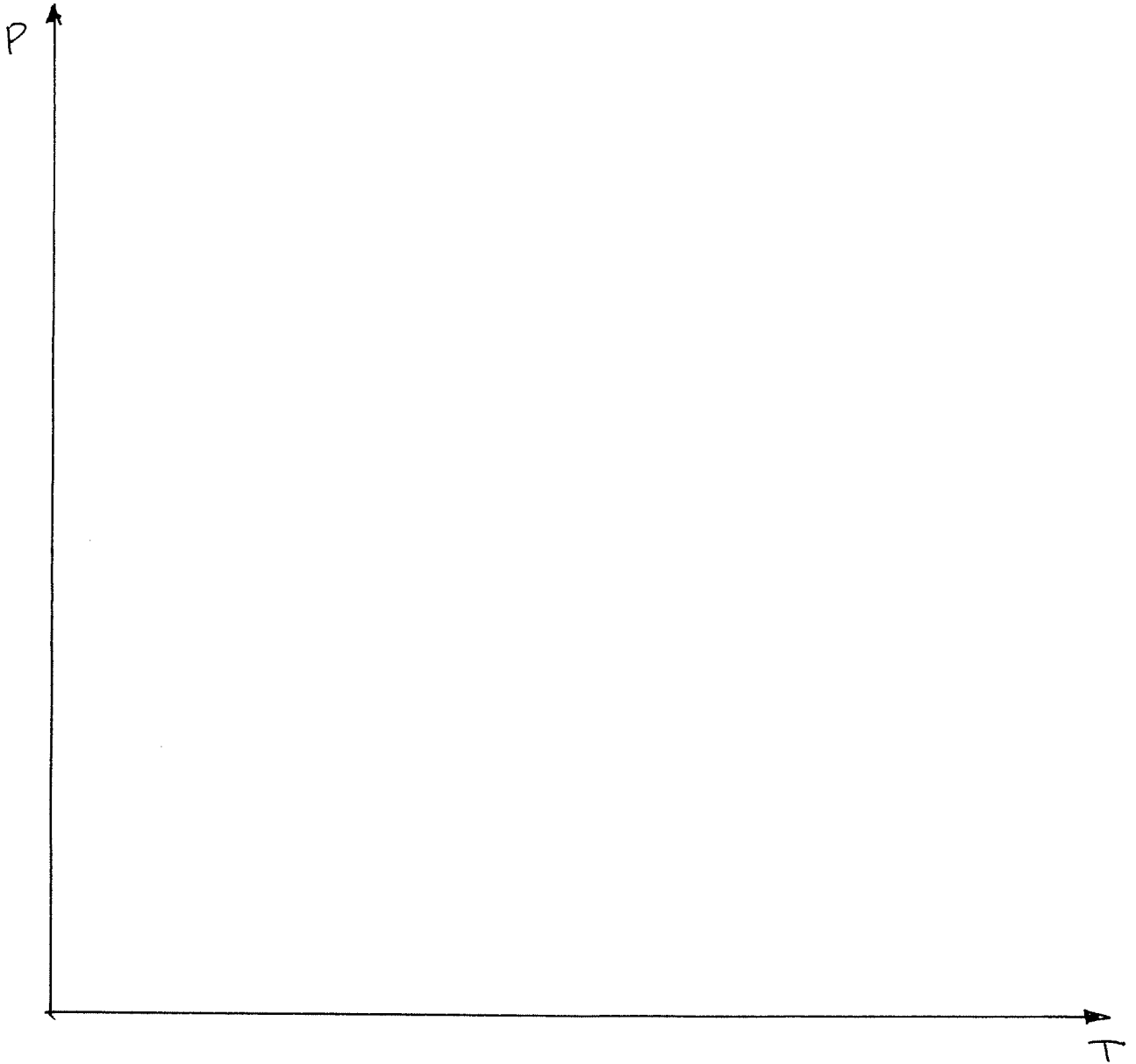
HINT: FOLLOW THE CONSTANT PRESSURE LINE & RELY ON EXPERIENCE.

THE P-V-T SURFACE



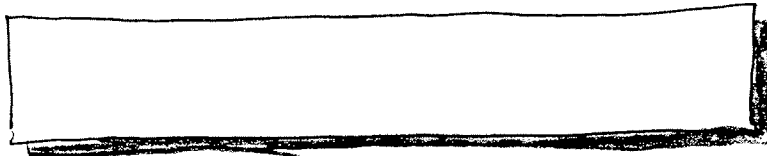
The PvT surface for a substance which contracts on freezing (not to scale).

P-T DIAGRAM

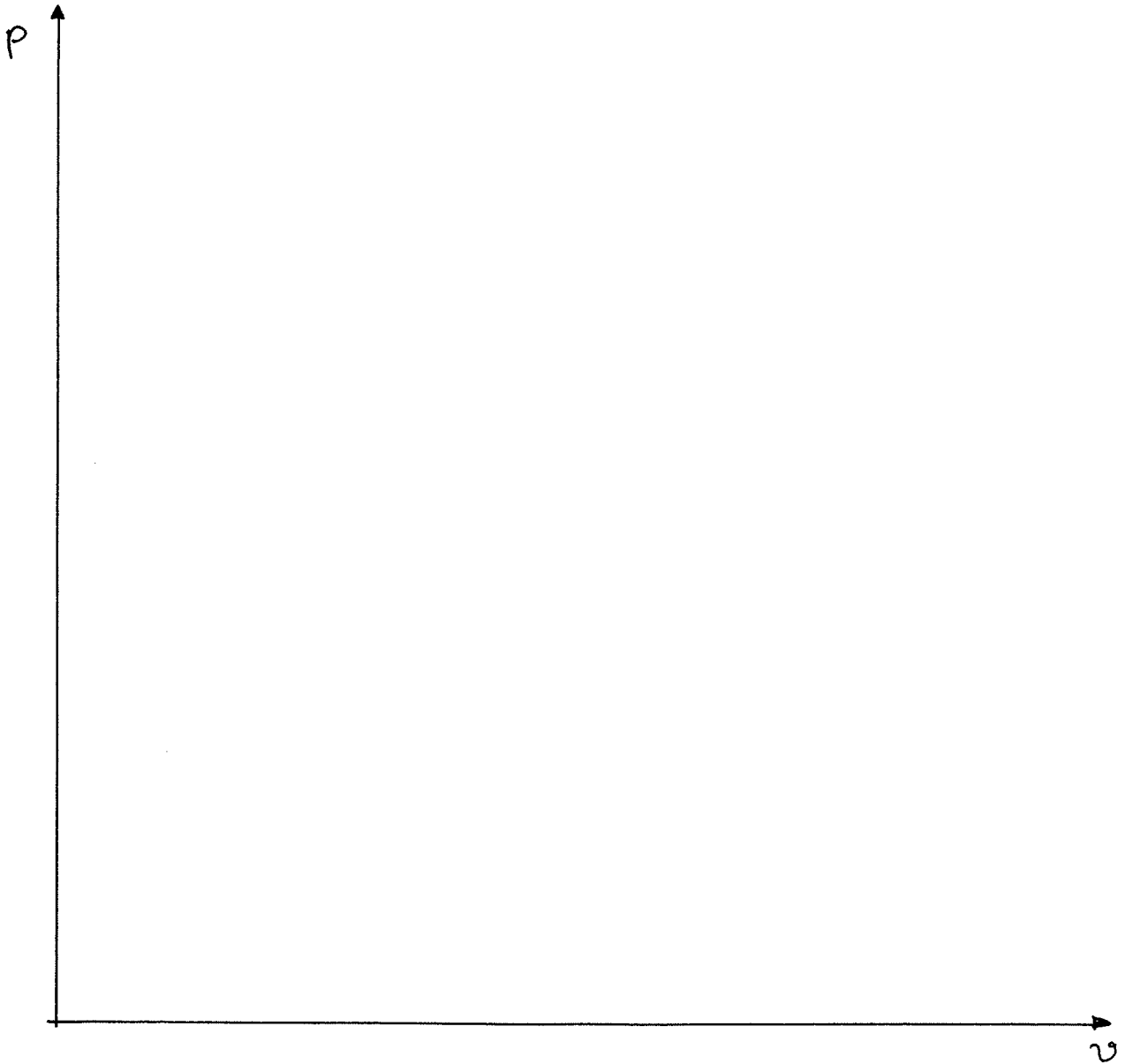


INCLUDE

- CRITICAL POINT
- TRIPLE LINE
- ¿ WHAT HAPPENED TO THE TWO-PHASE REGIONS?



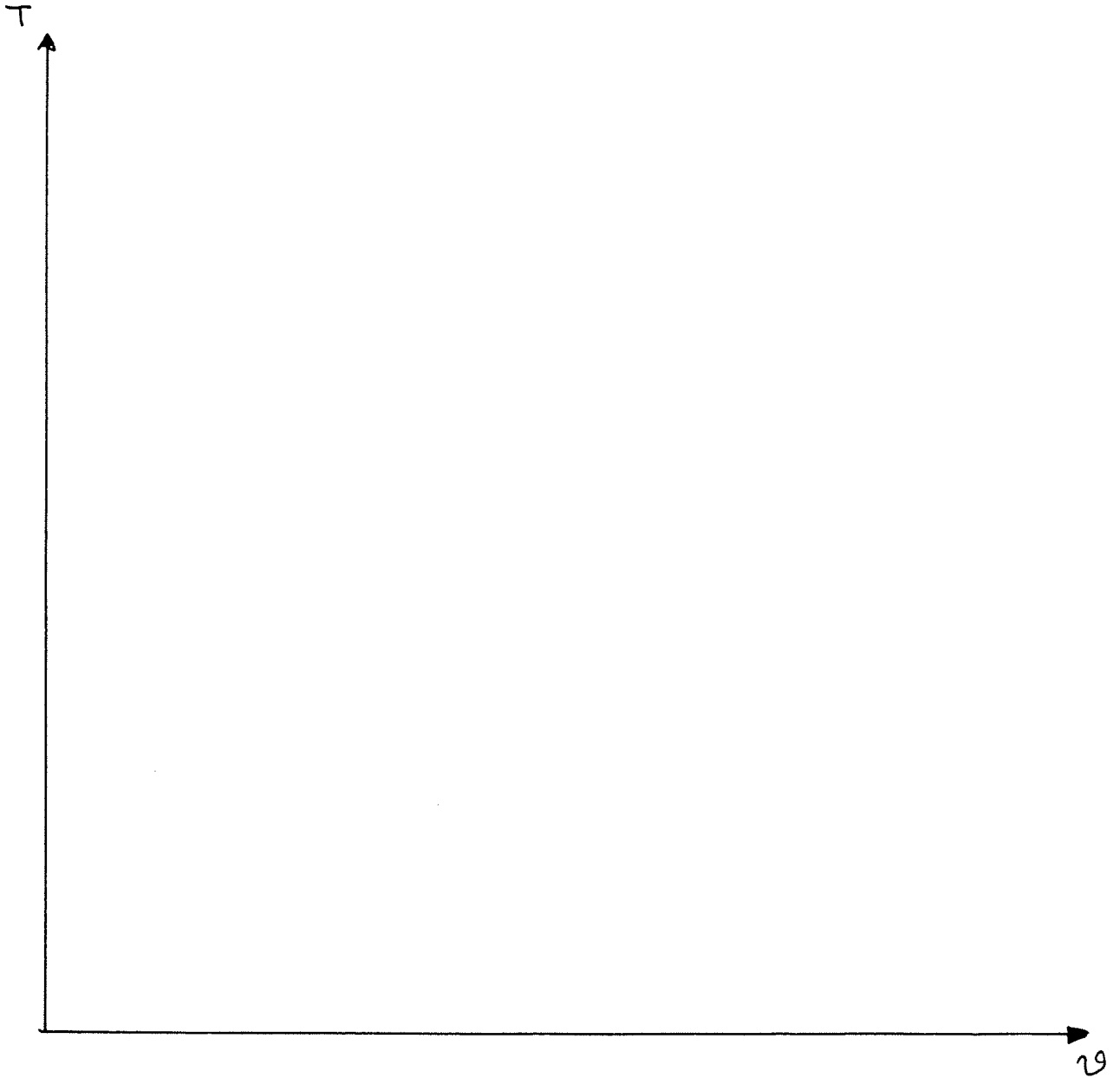
P-T DIAGRAM



INCLUDE

- CRITICAL POINT
- LINES of CONSTANT TEMPERATURE
- LABEL PHASES

T-U DIAGRAM



INCLUDE:

- CRITICAL POINT
- LINE(S) of CONSTANT PRESSURE
- LABEL PHASES