phase construction

0) Draw diagram
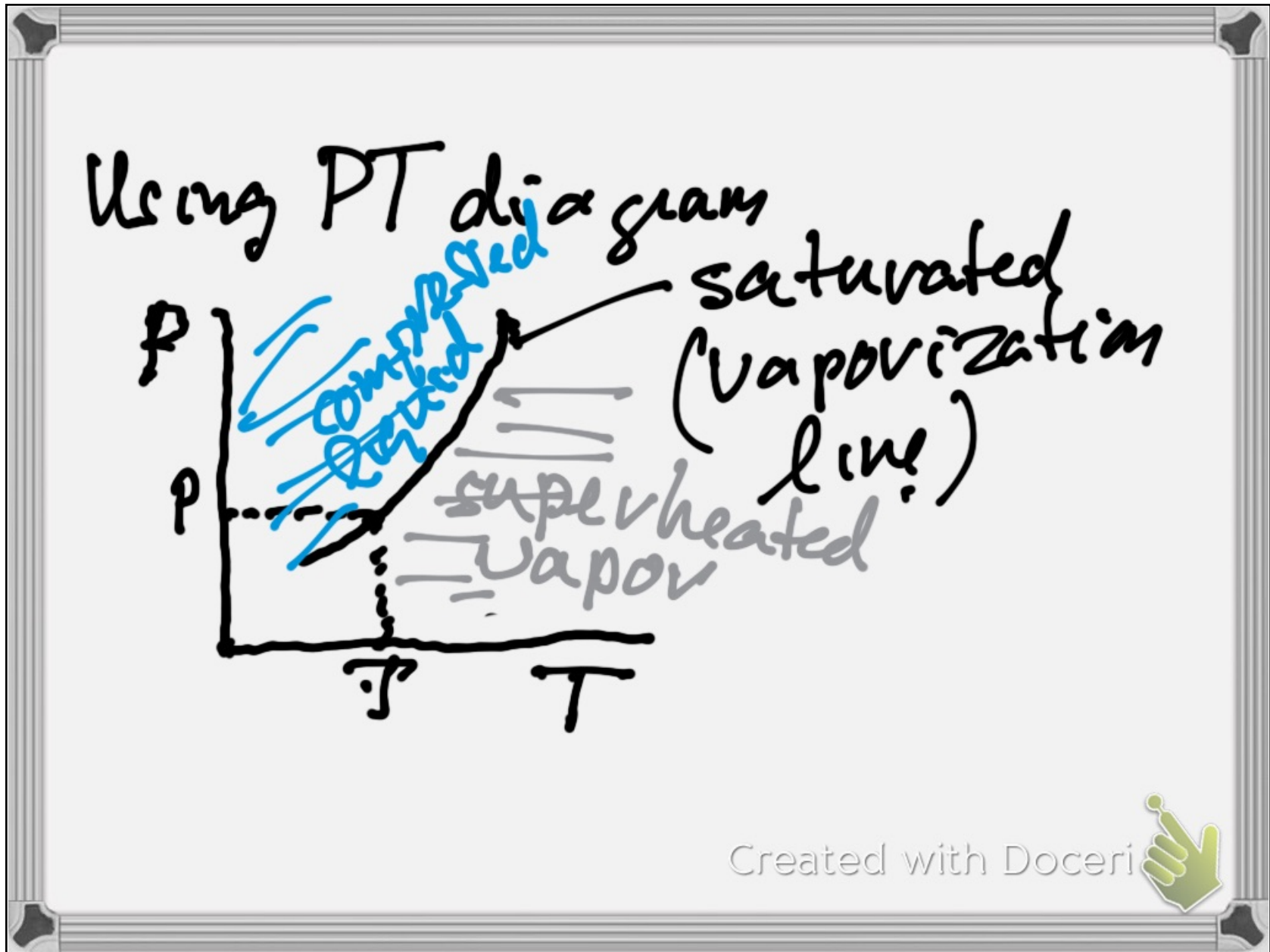
1) Draw line 1

2) Find line 1 in the
   saturated table,
   find saturated equivalent
   of line 2

3) Draw line 2

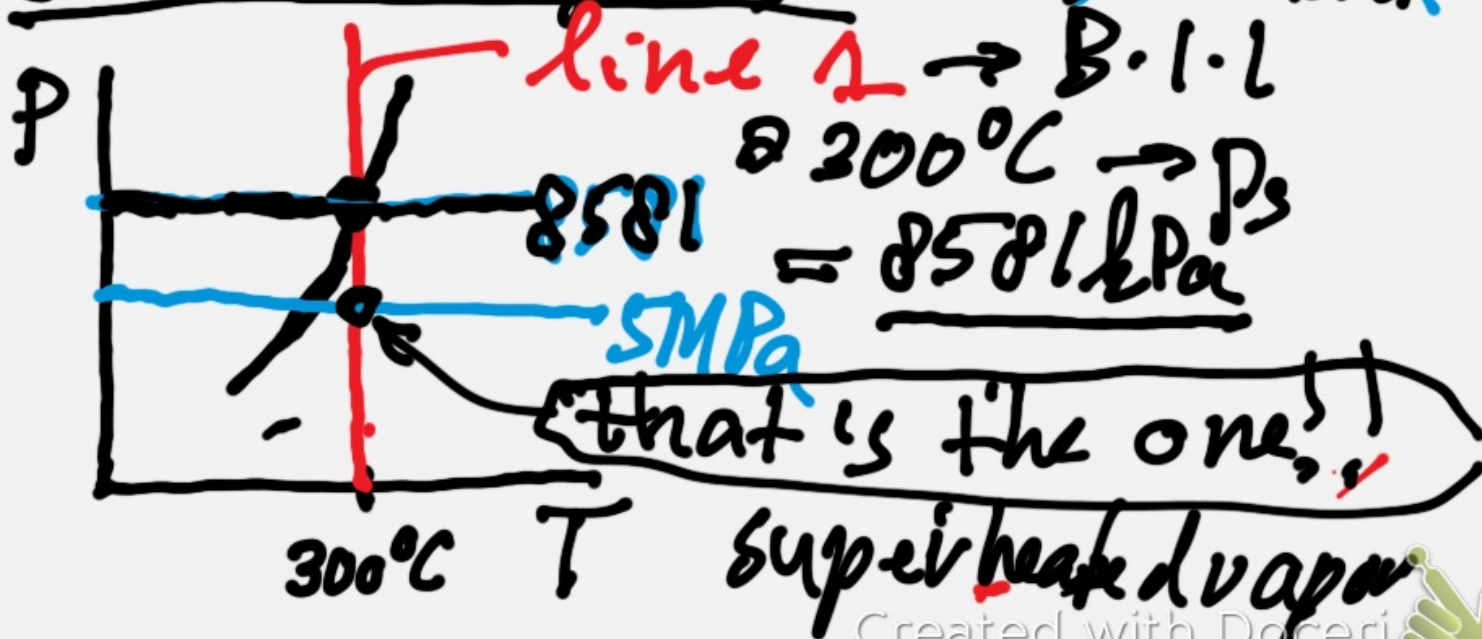# Using PT diagram

compressed liquid

saturated (vaporization line)

superheated vapor

P

P

T

T

Given: H_2O @ 300°C 5MPa.

Asked: phase, specific volume

Solution using P.T

line 1 → B.1.1

@ 300°C → P_s

5000 kPa

8581

@ 300°C = 8581 kPa

P_s

5MPa

that's the one!!

P

300°C   T   superheated vapor

5 MPa 300°C superheated
vapor : what is v

Table B.1.3
@5MPa, 300°C

$$v = 0.04532 \; \frac{m^3}{kg}$$

Tv — diagram

critical point C.P

T

compressed liquid

sat water/liquid

saturated vapor

superheated vapor

saturated 2 phase

U

$300°C$

$5MPa$

$C.P. 373$

step 1

$300°C$

Step 1

$5000 kPa$

Sup

Vap

step 2 : sat table at $300°C$

$\longrightarrow P_s = 8581 \, kPa$

Pressure is up in T_v

P v

P

5MPa

that's the
one sat 300 °C
5 MPa

8581 kPa

300 °C

Temperature is down in P v

othu way

P 264°C

5MPa

300°C