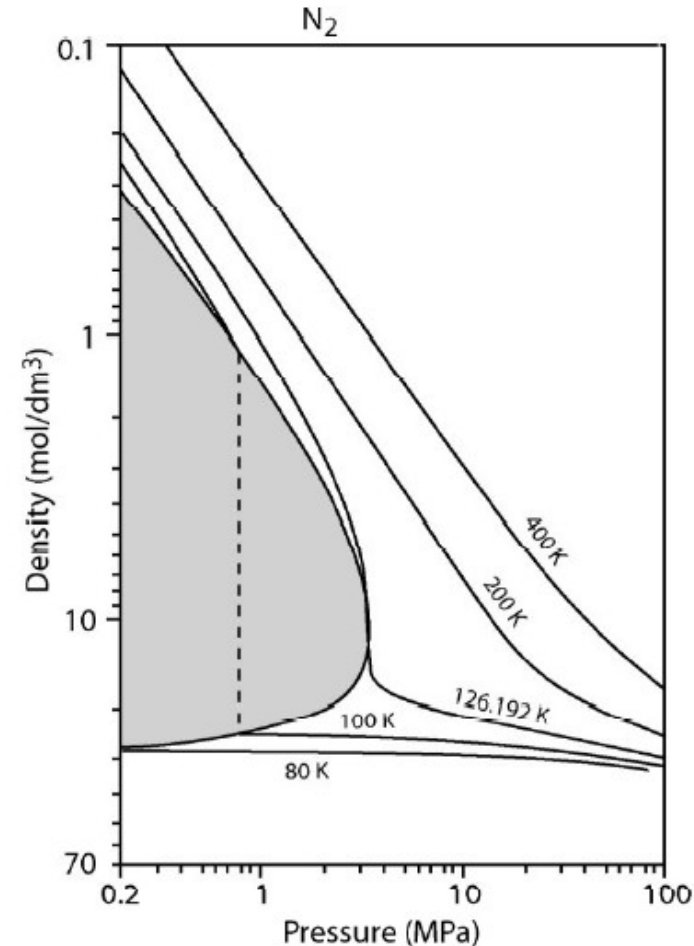
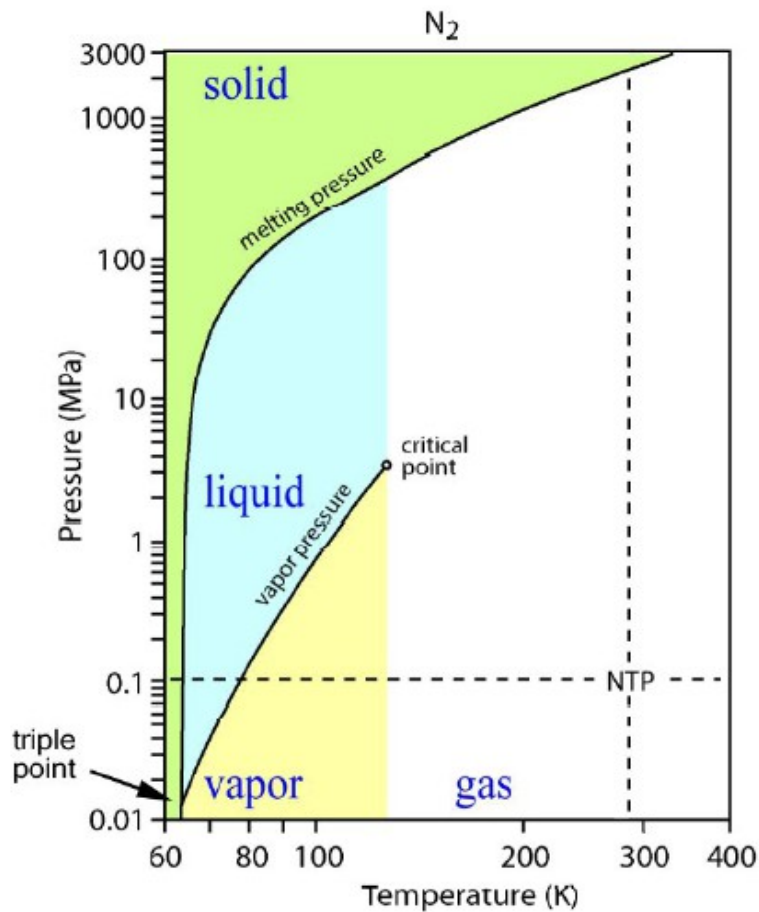


# Problem 1

Given the following phase diagrams of nitrogen  $N_2$ , work out the time it takes to evaporate one liter of liquid  $N_2$  at atmospheric pressure 0.1 MPa, when 10 W of continuous heating is applied to the liquid.



# Problem 2

The table besides gives some measured values of specific heat for copper.

Using this data, estimate the Debye temperature  $T_D$  and Fermi temperature  $T_F$  of copper.

$T$ [K]	$C$ [mJ/(mol K)]
1.8	1.50
2.0	1.75
2.2	2.05
2.4	2.35
2.6	2.65
2.8	3.00
3.0	3.40
3.2	3.80
3.4	4.25
3.6	4.80
3.6	5.30
4.0	5.90