NAME :



# Quiz 18

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April 18, 2024

(a) Below, you are given two sketches of graphs we've discussed in class. On both of these graphs: [5]

(i) Label each of the axes as either $P$, $V$, or $T$.

(ii) Label the different phases (solid, liquid, gas, supercritical fluid) if they are present in each graph. Give a brief justification as to why you claim a phase is where it is.

(iii) Mark the following objects on the graph, if they are present: the critical point, the triple point, and the tie-lines. Give a brief description of each of these objects.

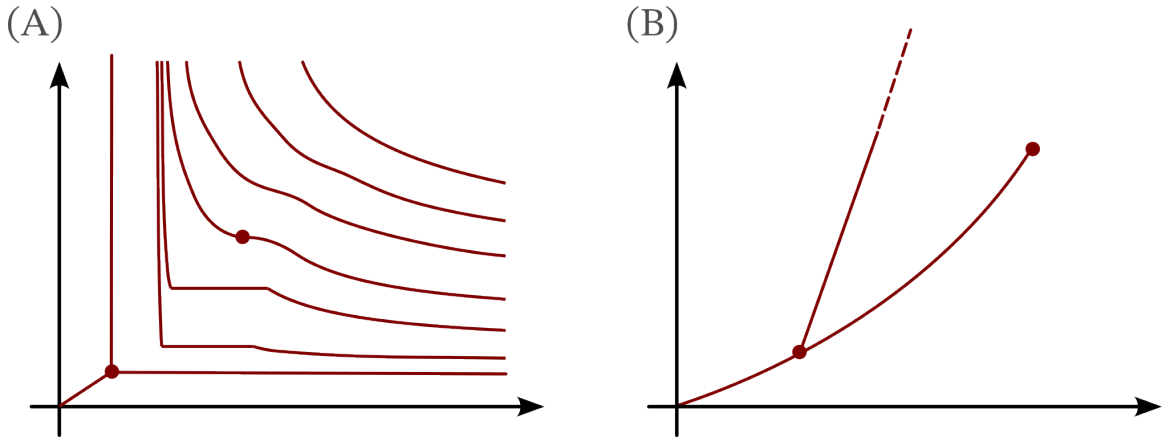


**Figure 1:** Two sketches of graphs we've discussed in class. Annotate these graphs as indicated.

(b) Sketch what graph (B) in part (a) would look like for water, clearly explaining what is different. What effect does this have on the melting point of ice? [3]

(c) Sketch the liquid-gas coexistence region on the $PV$ plane, labelling any points of interest. Explain how this region is constructed from the isotherms shown in graph (A) of part (a). [2]