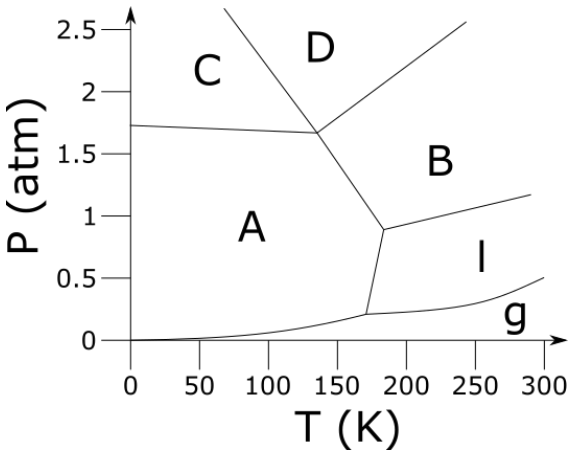
Quiz 4.2 – Phase Boundaries

Name: _____

Use the phase diagram at right to answer the following questions:



- Estimate the slopes of the A-B and the D-B transition lines (These should technically be curves, but the curvature between solid phases is usually small)

- If $\Delta H_{A-B} = 2.5\frac{kJ}{mol}$ at $150.0\ K$, find $\Delta V_{m,A-B}$

- If $\Delta V_{m,D-B} = 2.3\frac{mm^3}{mol}$ at $200.0\ K$, find ΔH_{D-B}

Gasoline readily evaporates if it spills onto the ground. For gasoline, $\Delta H_{vap} = 39.1\frac{kJ}{mol}$, and gasoline has a normal boiling temperature of $333\ K$. What is the vapor pressure of gasoline at $20°C$?

You measure the vapor pressure of an unknown substance at two temperatures. At $260.0\ K$ the vapor pressure is $13.5\ torr$, and at $310.0\ K$ the vapor pressure is $1240\ torr$. Use these data to estimate ΔH_{vap} for this substance.

Use today's barometric pressure to estimate the actual boiling temperature of water today in Cedar City, Utah.

Sonnet 18: Shall I compare thee to a summer's day?

By William Shakespeare

Shall I compare thee to a summer's day?
Thou art more lovely and more temperate:
Rough winds do shake the darling buds of May,
And summer's lease hath all too short a date;
Sometime too hot the eye of heaven shines,
And often is his gold complexion dimm'd;
And every fair from fair sometime declines,
By chance or nature's changing course untrimm'd;
But thy eternal summer shall not fade,
Nor lose possession of that fair thou ow'st;
Nor shall death brag thou wander'st in his shade,
When in eternal lines to time thou grow'st:
  So long as men can breathe or eyes can see,
  So long lives this, and this gives life to thee.