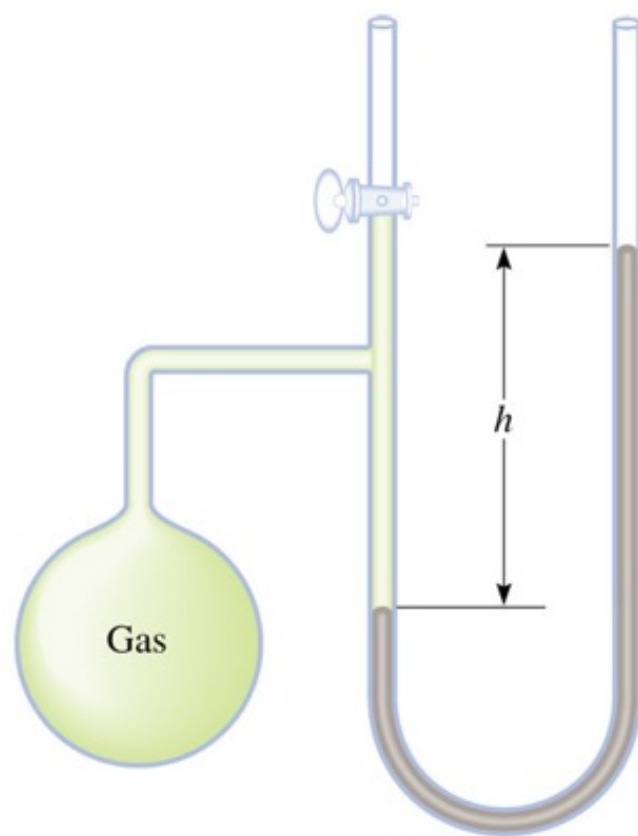


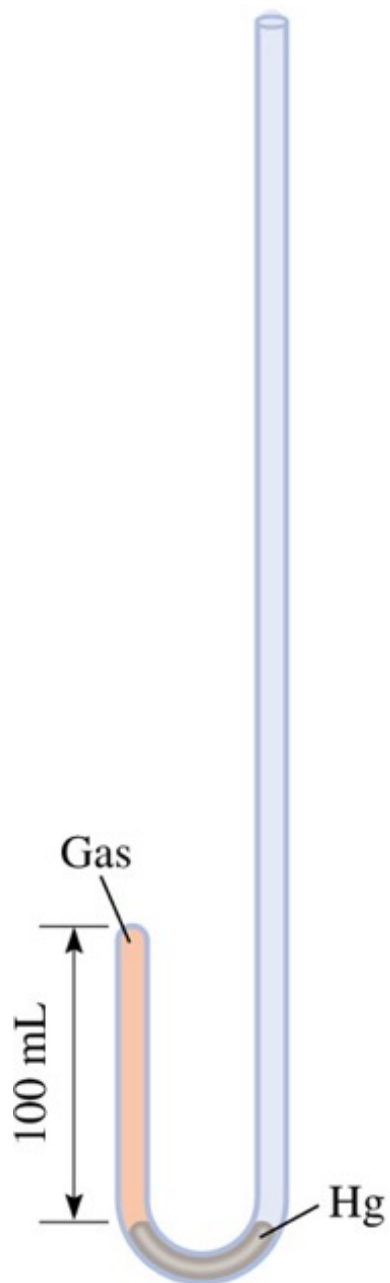
$$P_{\text{gas}} = P_h$$

(a)

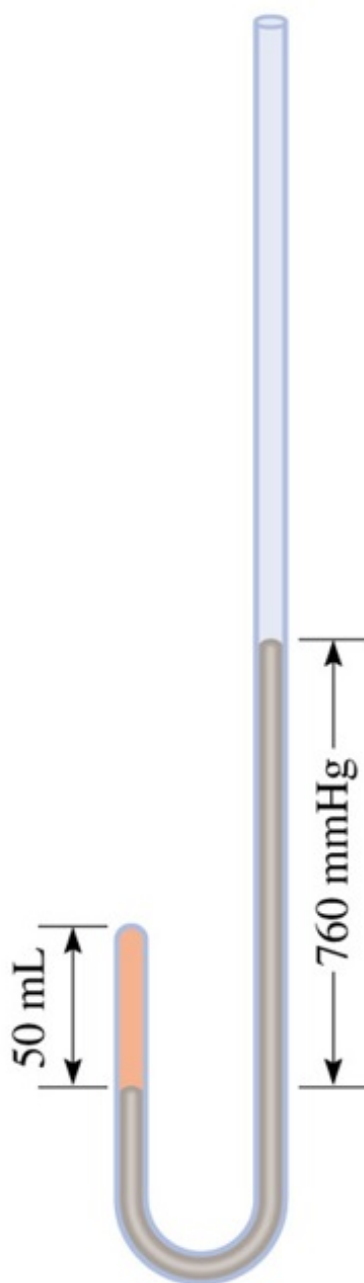


$$P_{\text{gas}} = P_h + P_{\text{atm}}$$

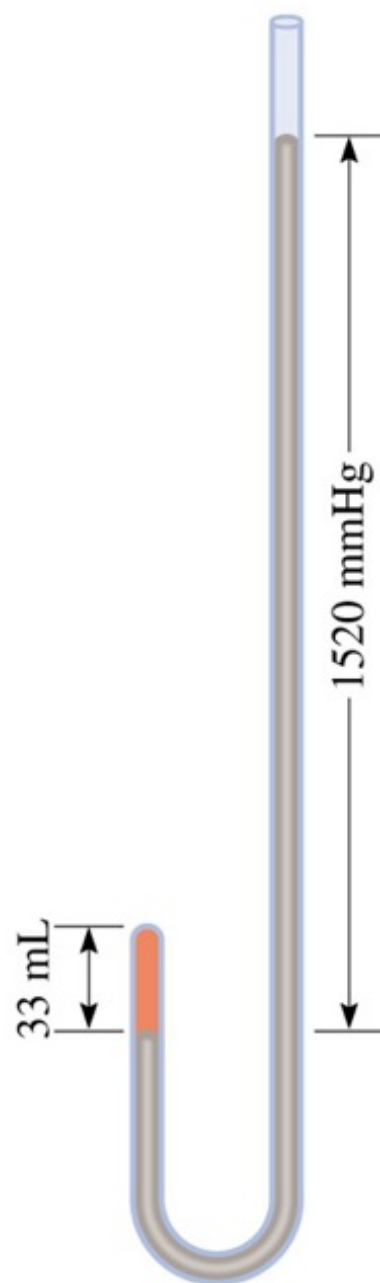
(b)



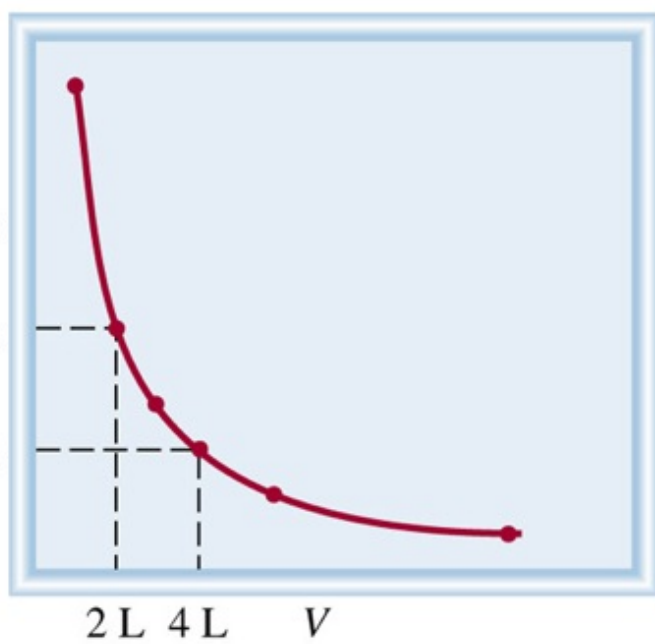
(a)



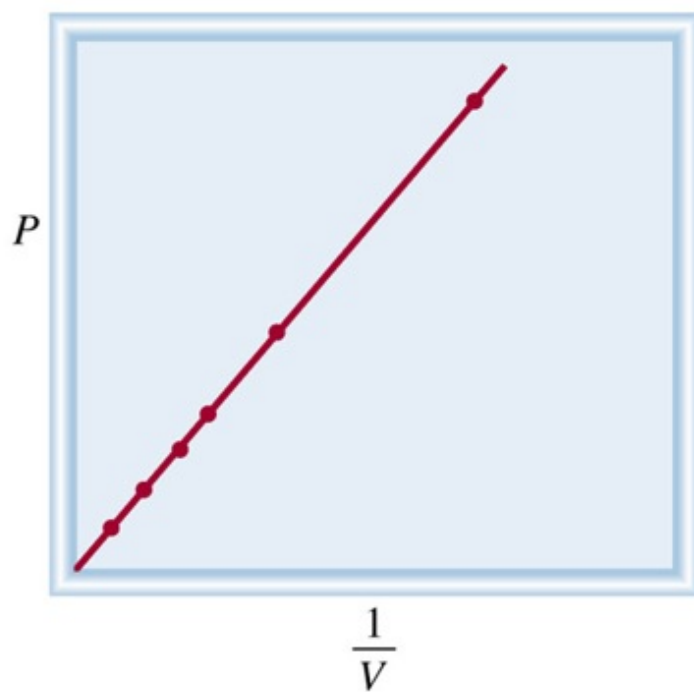
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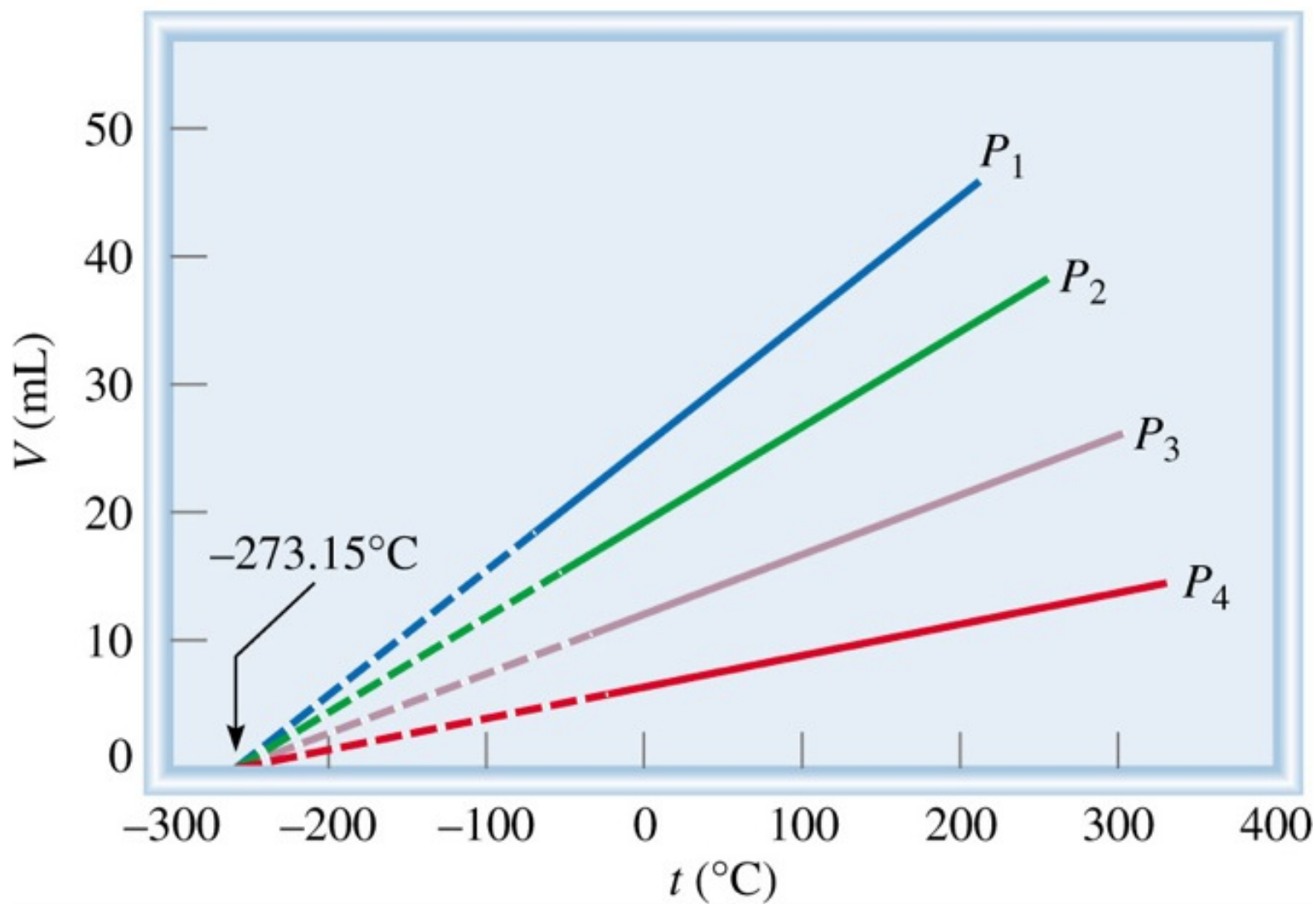
(c)



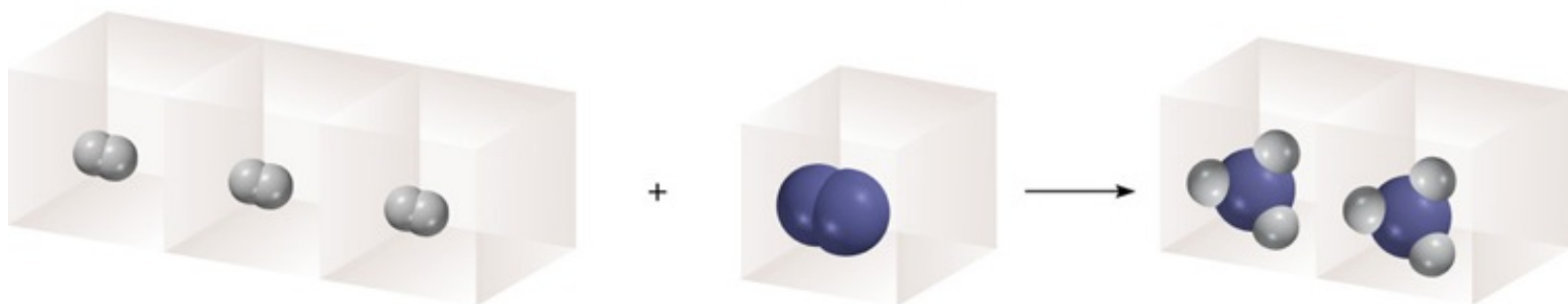
(a)



(b)



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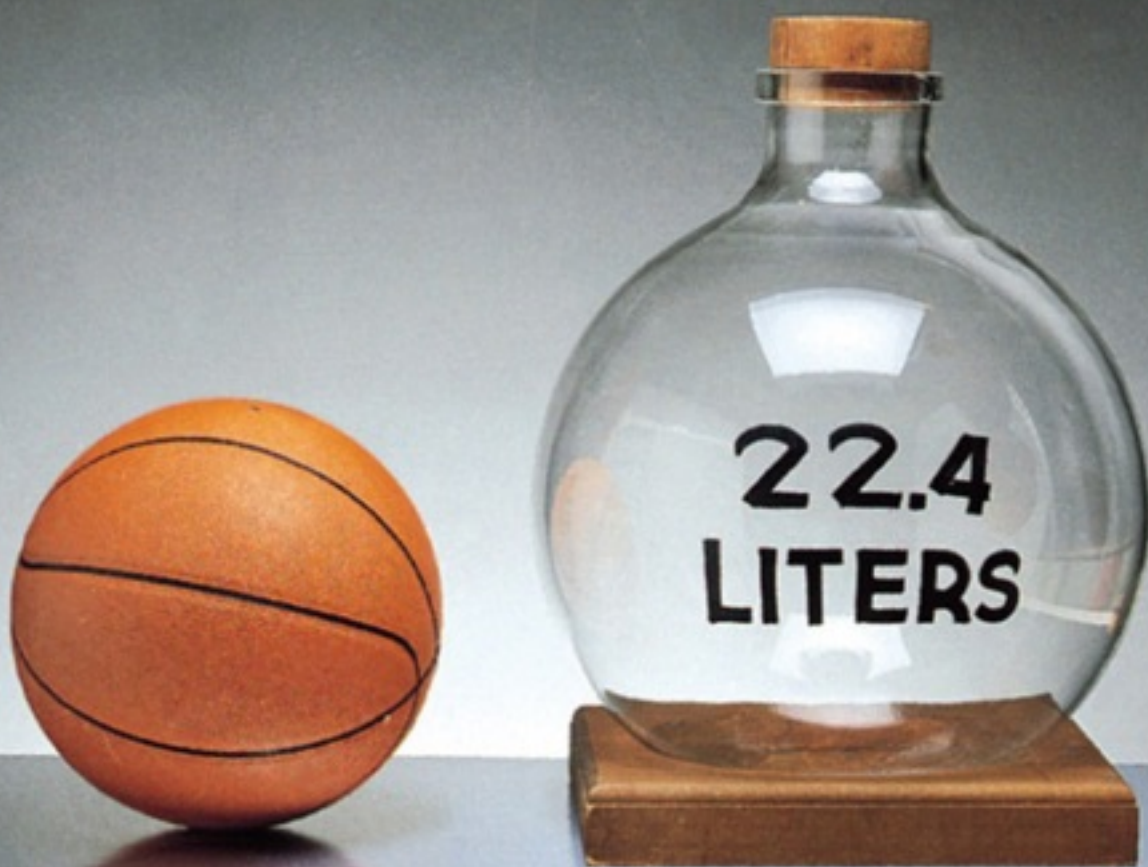


$3\text{H}_2(\text{g})$   
3 molecules  
3 moles  
3 volumes

+  $\text{N}_2(\text{g})$   $\longrightarrow$   
+ 1 molecule  $\longrightarrow$   
+ 1 mole  $\longrightarrow$   
+ 1 volume  $\longrightarrow$

$2\text{NH}_3(\text{g})$   
2 molecules  
2 moles  
2 volumes

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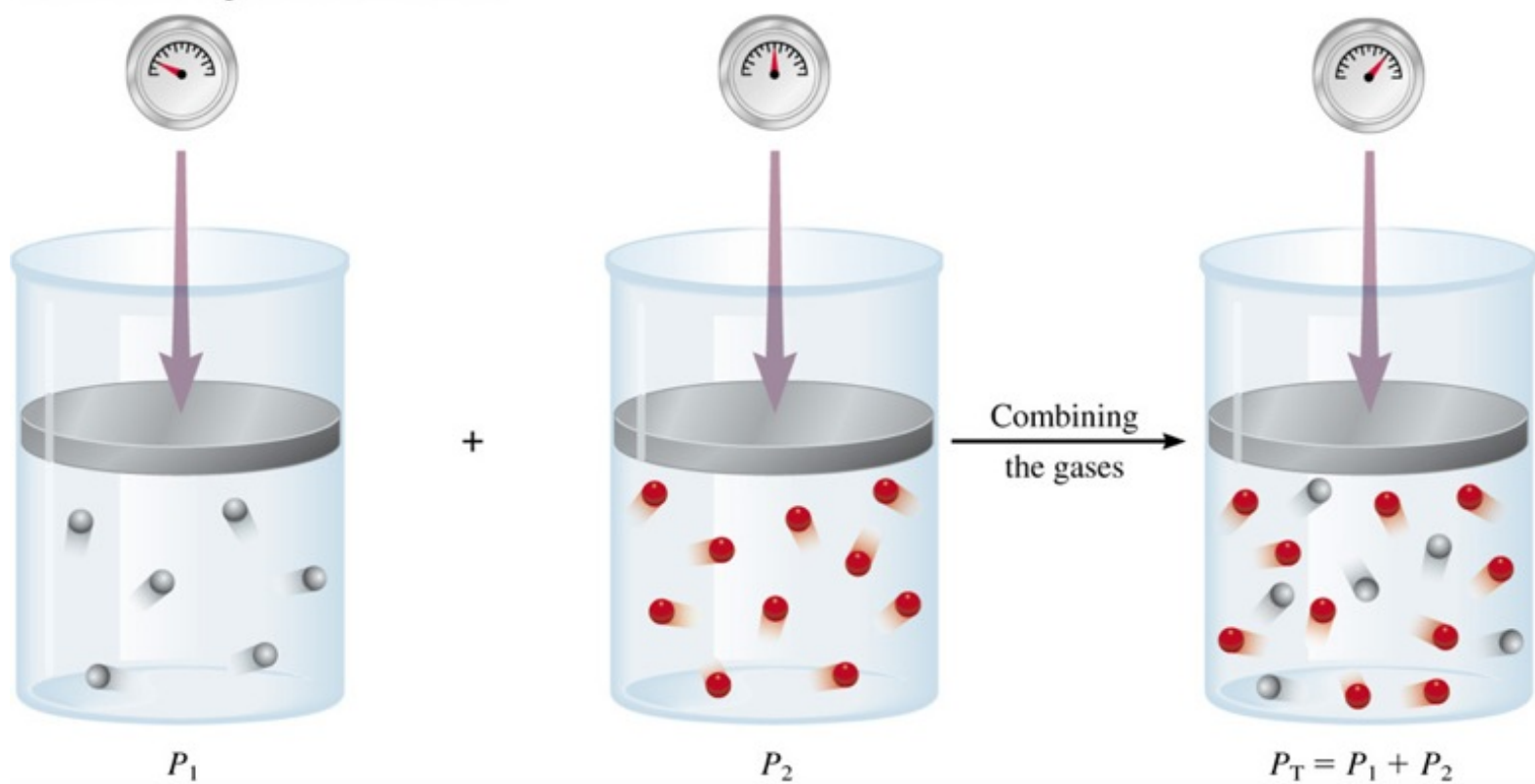


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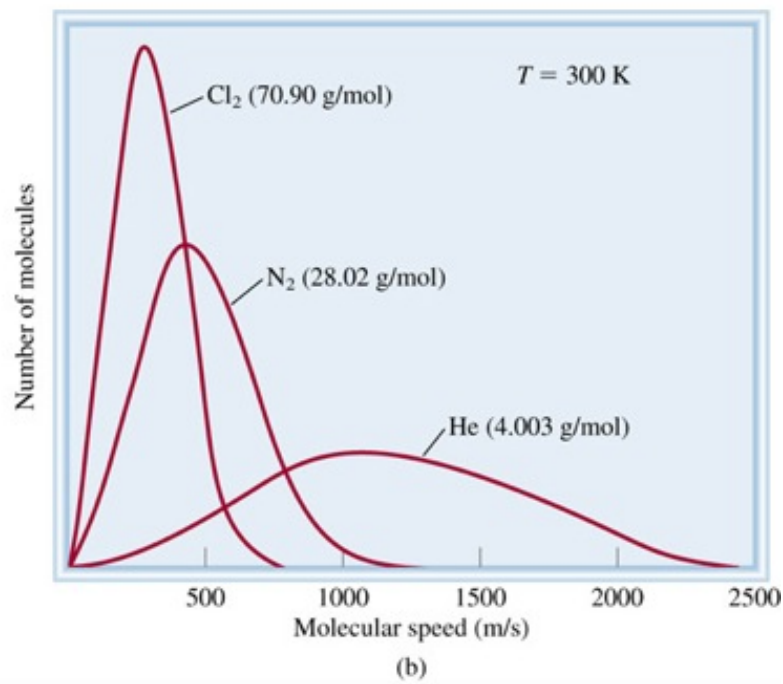
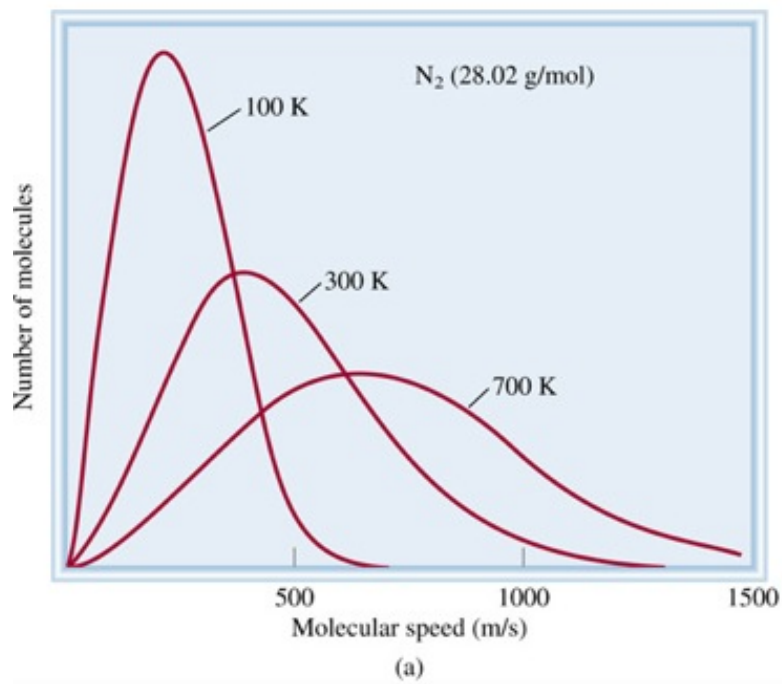


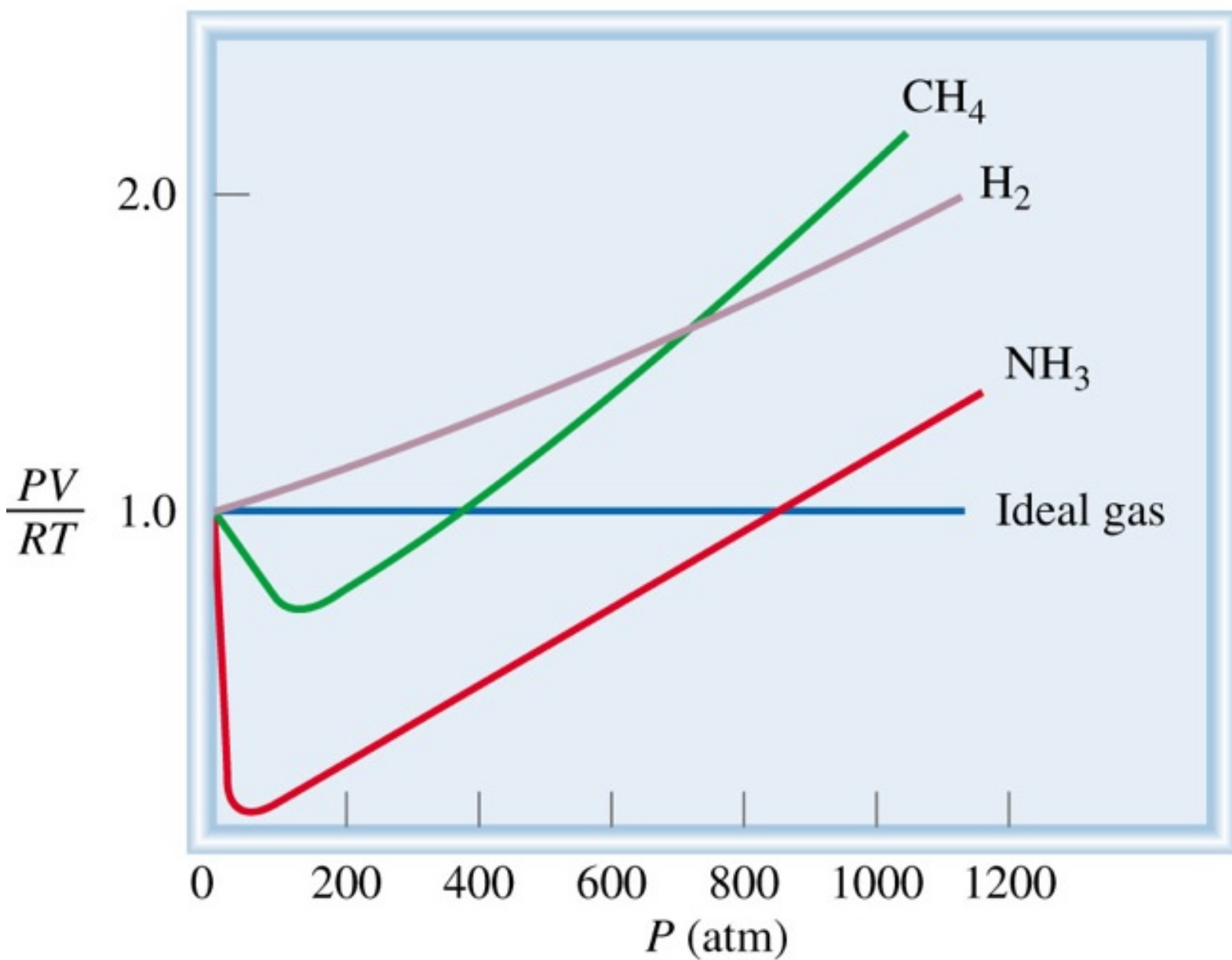
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Volume and temperature are constant



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**Table 5.3****van der Waals Constants  
of Some Common Gases**

<b>Gas</b>	$a$ $\left(\frac{\text{atm} \cdot \text{L}^2}{\text{mol}^2}\right)$	$b$ $\left(\frac{\text{L}}{\text{mol}}\right)$
He	0.034	0.0237
Ne	0.211	0.0171
Ar	1.34	0.0322
Kr	2.32	0.0398
Xe	4.19	0.0266
H <sub>2</sub>	0.244	0.0266
N <sub>2</sub>	1.39	0.0391
O <sub>2</sub>	1.36	0.0318
Cl <sub>2</sub>	6.49	0.0562
CO <sub>2</sub>	3.59	0.0427
CH <sub>4</sub>	2.25	0.0428
CCl <sub>4</sub>	20.4	0.138
NH <sub>3</sub>	4.17	0.0371
H <sub>2</sub> O	5.46	0.0305