

RJP-410

$$\text{Given } (P+b)(v-a) = nRT$$

Find  $(\partial P / \partial v)_T$

Solve for P

$$P = (nRT/v-a) - b$$

Then

$$\begin{aligned} \frac{\partial P}{\partial v} &= nRT \frac{\partial (v-a)^{-1}}{\partial v} - \frac{\partial b}{\partial v} \\ &= -\frac{nRT}{(v-a)^2} \frac{\partial}{\partial v} (v-a) - 0 \end{aligned}$$

$$\frac{\partial P}{\partial v} = -\frac{nRT}{(v-a)^2}$$