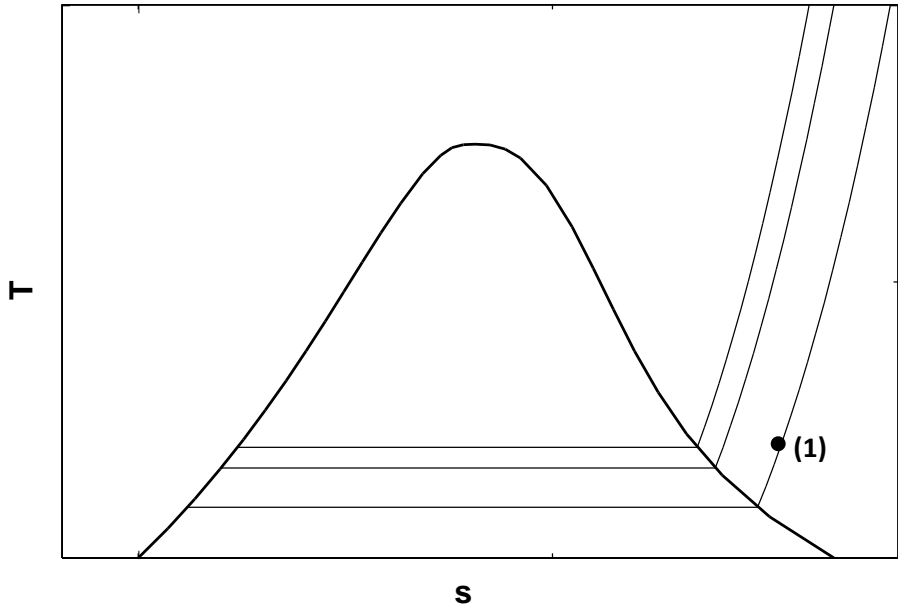


# Fun with Psychrometrics

Consider the  $T-s$  (or  $T-v$ ) diagram for the water in a moist air mixture. The moist air has a temperature  $T_1$  and relative humidity  $\phi_1 < 100\%$



Label these points on the diagram:

1. Line of constant  $P_v$
2.  $P_g$  (if  $\phi = 100\%$ )
3.  $T_{dew\ point}$
4. The adiabatic saturation point. Show  $T_{as}$  and the corresponding vapor pressure

How do  $T$  (or  $T_{db}$ ),  $T_{as}$  (or  $T_{wb}$ ) and  $T_{dew}$  compare when  $\phi = 100\%$ ?

When  $\phi = 100\%$ ? \_\_\_\_\_

**Psychrometrics Calculations Comment Card<sup>1</sup>**

- How would you rate calculating  $\omega$  if you know  $T_{db}$  and  $T_{wb}$ ?
- Easy as pie       Messy but doable       Not a chance!
- How would you rate calculating  $T_{db}$  if you know  $\omega$  and  $T_{wb}$ ?
- Easy as pie       Messy but doable       Not a chance!
- How would you rate calculating  $h$  if you know  $\phi$  and  $T_{db}$ ?
- Easy as pie       Messy but doable       Not a chance!
- How would you rate calculating  $h$  if you know  $\omega$  and  $T_{db}$ ?
- Easy as pie       Messy but doable       Not a chance!
- How would you rate calculating  $T_{wb}$  if you know  $\phi$  and  $T_{db}$ ?
- Easy as pie       Messy but doable       Not a chance!

How did you hear about these calculations?

\_\_\_\_\_

\_\_\_\_\_

Would you recommend these calculations to a friend? \_\_\_\_\_

\_\_\_\_\_

(If you are interested in learning how to avoid these calculations, please pay attention during the rest of class!)

<sup>1</sup> When filling out your comment card, please assume that the moist air total pressure is known and constant. ME301 will hold your responses in strict confidence and will not share your identity with any third party.

# Psych Chart to the rescue!

