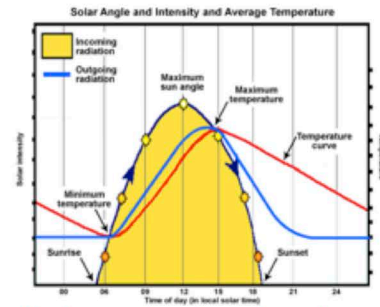


- 3) The schematic to the right was shown in the overview slides to explain the diurnal cycle of temperature in terms of radiative balance. Unfortunately, the diagram has an error (that I intentionally omitted from the narrative) where two of the curves are not consistent with the physics of radiative heat transfer. Which two curves are in error? Use the laws of radiation to explain what the inconsistency is between the two curves.

(Hint: compare the diagram with Figure 3.02 of the text.)



Black curve-incoming solar radiation  
Blue curve-outgoing IR radiation  
Red curve-temperature

Use heat transfer concepts to answer the following two questions. Assume you are wearing the same clothing for every situation.

- 4) During a very cold, calm, winter night, why would you feel colder near sea level (e.g. 100 meters) than at a high elevation site like a ski resort (3000 meters) when the air temperatures are the same?
- 5) At noon on a very cold, calm, sunny day, why do you feel warmer than what air temperature indicates?