

Reading for February 25: Boas Chapter 3 page 305-6 (Andrew P. recommends this bit). Boas 8.5 and 8.6.

- (1) An average person takes 18 breaths per minute and each breath exhales  $0.0016 \text{ m}^3$  of air containing 4 %  $\text{CO}_2$ . At the start ( $t = 0$ ) of a speech with an audience of 300, the room's air contains 0.4 %  $\text{CO}_2$ . The ventilation system delivers  $10 \text{ m}^3$  of air per minute to the  $1500 \text{ m}^3$  room. Find the  $\text{CO}_2$  concentration as a function of time after the start of the speech.
- (2) Find the general solution of  $u'' + 3u' + 2u = 0$  on  $-\infty < x < \infty$ .