

PROBLEM SET NO. 3 (DUE ON MONDAY, OCTOBER 20 AT  
4:00 PM)

FRIDAY 10-17

- **Problem 7:** (recommended) Suppose  $\lim_{x \rightarrow a} f(x) = \alpha$  and  $\lim_{x \rightarrow a} g(x) = \beta$ . Show that  $\lim_{x \rightarrow a} (f \cdot g)(x) = \alpha\beta$ .
- **Problem 8:** Considering the functions  $\sin(x)$  and  $\cos(x)$ , prove that the limits as  $x \rightarrow \pm\infty$  do *not* exist.