Take home Quiz 7   MAC-2312   F09   **Name:** _____

To receive credit you MUST SHOW ALL YOUR WORK. Due Thursday, Dec. 3

1. (15 pts) (a) (8 pts) Use the definition to find the Taylor series of $f(x) = \sin x$ at $x_0 = \pi/4$.

(b) (7 pts) Use the Remainder Estimation Theorem and the method of Example 1 (p. 695, textbook) to show that the Taylor series of $\sin x$ at $x_0 = \pi/4$ converges to $\sin x$ for all $x \in \mathbf{R}$.

2. (10 pts) Find the Maclaurin series for $f(x) = \frac{x}{(2+x)^2}$ and also determine its interval of convergence. (*Hint:* Start from the Maclaurin series of $\frac{1}{1-x}$.)