## Homework Assignment 10 Due on Thursday 5/9

Do the following exercise problems in the text book by Salas, Hille and Etgen,
Sec 7.1: 6, 14, 26, 32, 34, 49, 50, 52, 53
Sec 7.2: 4, 6, 14, 23
Sec 7.3: $4,12,14,18,22,28,30,32,34,40,43,46,47,52,66$
Sec 7.4: 5, 16, 18, 24, 32, 36, 37, 42, 49, ,51, 58
Do the following problems.
Exercise 1. Let $f(x)=x^{2}+2 x$.

1. Show that $f(x)$ is not one-to-one on $\mathbb{R}$, but it is one-to-one on $(-\infty,-1]$.
2. SInce $f(x)$ is one-to-one on $(-\infty,-1]$, find its inverse $f^{-1}(x)$.

Exercise 2. Show that for $0<x$, we have

$$
\ln (1+x)>x-\frac{x^{2}}{2}
$$

Exercise 3. FInd the derivative of $\ln \left(x+\sqrt{x^{2}+1}\right)$. Use this result to find

$$
\int_{0}^{1} \frac{1}{\sqrt{1+x^{2}}} d x
$$

