1. Find a power series representation for the function $f(x) = \arctan(x)$.

Hint: $\arctan(x) = \int \frac{1}{1+x^2} dx$.

2. Find a power series representation for the function $f(x) = \ln(6 - x)$.

Hint: You can approach it in two ways:

(1) Use the power series expansion for $\frac{1}{6-x}$ and integrate term by term. Do not forget the '+C'!

(2)OR: use the Taylor Series for $\ln(1 + x)$ at 0: $\ln(1 + x) = \sum_{n=1}^{\infty} (-1)^{n-1} \frac{x^n}{n}$.

Please fold the paper and write your NAME and UT EID clearly on the back.