

1. Find the Maclaurin series expansion for  $\frac{1}{1+x^2}$
2. Use your series from #1 to find the Maclaurin series for  $\arctan(x)$
3. Use your series from #2 to write a series that is equivalent to  $\pi$
4. How close does  $S_{100}$  approximate  $\pi$ ?