tan-1(x) has the Taylor expansion:

1. The following script was written in MatLab and gave the listed output.

clc; clear all; close all;

syms x;

fun(x) = atan(x);

n = 0;

while true

fun\_diff = diff(fun,n+1);

remainder = max(abs(double(fun\_diff(linspace(0,pi/4,500)))))/...

factorial(n+1)\*power((pi/6),n+1);

if remainder < power(10,-5) || n >= 50

break

end

n = n + 1 ;

end

disp(n); disp(remainder);

n = 13

remainder = 7.6571e-06