Name: **Tutorial time:**

1. Determine the Maclaurin polynomial p_5 (degree 5 Taylor polynomial, about $x = 0$) for the following functions:

   (a) $f(x) = \tan(x)$

   (b) $g(x) = e^x \sin(x)$

2. Determine the degree 4 Taylor polynomial for $f(x) = \cos(x)$ about $a = \pi/3$.

3. Find a function $f(x)$ satisfying the given conditions:

   (a) $f'(x) = \dfrac{1}{1+x^2}$, and $f(0) = \dfrac{\pi}{4}$.

   (b) $f''(x) = 6x + 4$, $f(0) = 3$, and $f'(0) = -2$.