APPM 5600 — HOMEWORK # 2

1. (30 points) The function $f(x) = (x-5)^9$ has a root (with multiplicity 9) at $x = 5$ and is monotonically increasing (decreasing) for $x > 5$ ($x < 5$) and should thus be a suitable candidate for your function above. Set `a=4.8` and `b=5.31` and `tol = 1e-4` and use `bisection` with: (10 points for bisection code)

   i. (5 pts) $f(x) = (x-5)^9$.

   ii. (5 pts) The expanded expanded version of $(x-5)^9$, that is, $f(x) = x^9 - 45x^8 + \ldots - 1953125$.

   iii. (10 pts) Explain what is happening.