3. [12 points] Let

\[ I = \int_0^1 \left( 1 + \frac{t^2}{2} \right)^{\frac{5}{2}} \, dt \]

a. [5 points] Approximate the value of \( I \) using Right(2) and Mid(2). Write each term in your sums.

b. [2 points] Are your estimates of the value of \( I \) obtained using Right(2) and Mid(2) guaranteed to be overestimates, underestimates or neither?

c. [3 points] Find the first three nonzero terms of the Taylor series for \( g(t) = \left( 1 + \frac{t^2}{2} \right)^{\frac{5}{2}} \) about \( t = 0 \).

d. [2 points] Use your answer from part (c) to estimate \( I \).