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.