* Approximate the following integral: using *quadl* command.

1. Plot the on the interval to estimate an upper bound for it.
2. Approximate the integral using the Midpoint Rule with n =9.
3. Use part (a) to estimate the error in part b
4. Use the integral command to approximate the given integral.
5. Give the actual error; comparing it to your estimate in part c.
6. Plot on the interval to estimate an upper bound for it.
7. Approximate the integral using Simpson’s Rule with n = 6.
8. Use part (f) to estimate the error in part (g).
9. Use integral command to approximate the given integral.
10. Give the actual error; comparing it to your estimate in part (h).
11. How large should we take n in order to guarantee that the Simpson’s Rule approximation for this integral is accurate to within 0.002 ?

- a) A spherical tank with a radius of 60 m is full of oil with a density of 920 kg/ Find the work done to pump the oil out until a height of 20 m of oil is left in the tank.

b) An aquarium 4 m long, 2 m wide, and 3 m deep is full of water. Find the work needed to pump three-fourth of the water out of the aquarium.

c) For the function]

(i) Find the average value of on the given interval.

(ii) Find such that

(iii) Sketch the graph of and a rectangle whose area is the same as the area under the graph of.