Weekly Assignment 3

Instructions: All integrations must be evaluated by hand. Show your work.

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1. Average value

Let $f(x) = x(\cos(2x) + \sin(3x))$.

a. Find the average value of $f(x)$ on $[0, \pi]$.

b. Using a graph of $f(x)$, approximate to at least two decimal places all the x-values between 0 and π for which $f(x)$ = average value.

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2. Area and Volume

Let R be the region in the plane between one arch of the curve $y = \cos(x)\sin(x)$ and the x-axis.

a. Find a range of values of x for this region.

b. Find the area of R.

c. Find the volume of the solid of revolution obtained by rotating R about the x axis.