Math 11B Discussion Section

Evaluate each of the following integrals.

(1)
$$\int 2y^2 \cos(9y)\, dy$$

(2)
$$\int_0^4 \frac{8y-1}{2y^2-15y-8}\, dy$$

(3)
$$\int_0^3 \frac{w^3}{\sqrt{9-w^2}}\, dw$$

(4)
$$\int \frac{6x^2-10x^4}{x^5-x^3}\, dx$$

(5)
$$\int_{\frac{3\pi}{4}}^{\pi} \sec^6(10t)\tan^4(10t)\, dt$$

(6) Estimate the net area between $h(x) = 5 + x - x^2$ on $[0,4]$ and the x-axis given $n = 8$ subintervals and using the midpoints for the height of the rectangles.

(7) Determine the area of the region bounded by the curves $y = x^2 - 6x + 10$ and $y = 5$.

(8) Find f_{avg}, the average value, of $f(x) = 10 - 4x - 6x^2$ on $[2,6]$, and determine the value c for which $f(c) = f_{\text{avg}}$.

(9) Using both the method of cylinders and the method of rings, determine the volume of the solid obtained by rotating the region bounded by $x = y^3$, $x = 8$ and the x-axis about the y-axis. Show that both methods agree.