

# Homework 6

Math 252

Due May 19th at 11:59 PM

## Textbook Exercises

**2.6:** 255, 259, 263, 269, 271, 272

**3.1:** 1, 3, 5, 13, 15, 17, 19, 25, 27, 33, 37, 39, 45

**Exercise 1:** Let  $L$  be a lamina bounded by  $\sin(x)$  and  $\frac{4}{\pi^2}x^2$  between  $x = 0$  and  $x = \frac{\pi}{2}$ . Find the centroid.

**Exercise 2:** Evaluate  $\int x^3 \cos(x^2) dx$ .

**Bonus:** Use integration by parts to show that  $\int \ln(x) dx = x \ln(x) - x + C$ .