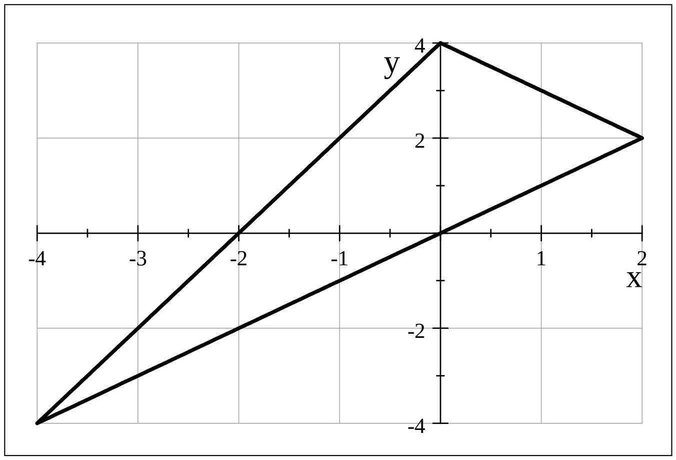
MATH 1920 PRACTICE EXAM II

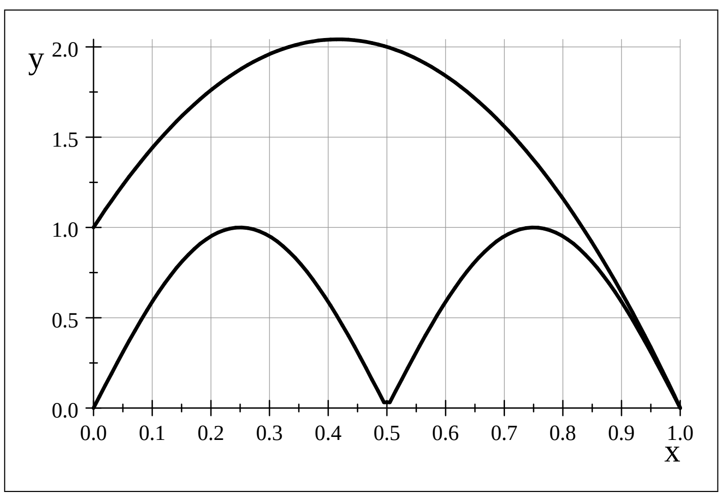
1. Let $\mathcal{R}$ be the finite region enclosed between the straight lines $f(x) = 4 - x$, $g(x) = x$ and $h(x) = 4 + 2x$



   (a) Set up the definite integral that computes the area of $\mathcal{R}$.

   (b) Let V be the volume obtained by revolving $\mathcal{R}$ about the line $x = 2$. Set up the definite integral that computes V using the Method of Washers.

2. Let $\mathcal{R}$ be the region enclosed between the curves $f(x) = -6x^2 + 5x + 1$ and $g(x) = |\sin(2\pi x)|$ on the interval $0 \leq x \leq 1$.



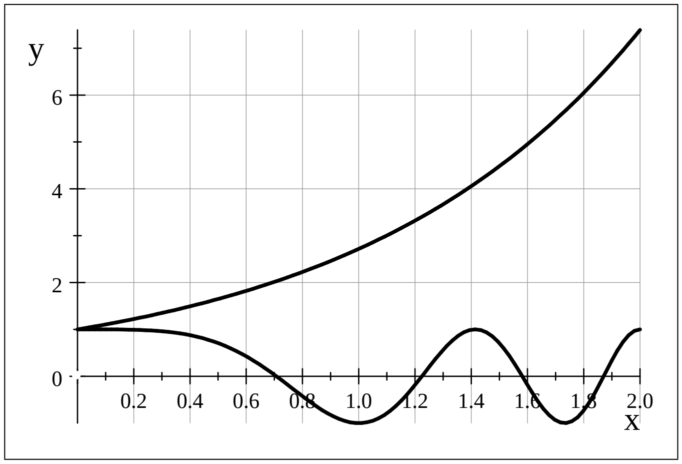
   (a) Set up the definite integral that computes the area of $\mathcal{R}$.

   (b) Let V be the volume obtained by revolving $\mathcal{R}$ about the x-axis. Set up the definite integral that computes V using the Method of Washers.

3. Use integraton by parts to compute $\int_0^2 xe^x \, dx$.

4. Use an appropriate substitution to help compute $\int_0^2 x \cos\left(\pi x^2\right) dx$.

5. Let $\mathcal{R}$ be the region enclosed between the curves $f(x) = e^x$ and $g(x) = \cos\left(\pi x^2\right)$ on the interval $0 \leq x \leq 2$.



Let V be the volume of the solid obtained by revolving $\mathcal{R}$ about the y-axis. Use the Method of Shells to compute V.

6. Let $\mathcal{R}$ be the region in Problem 5, and let V be the volume of the solid obtained by revolving $\mathcal{R}$ about the line $x = 2$. Set up the definite integral the computes V using the Method of Shells.