1) Use cancellation and re-inforcement to compute

\[ \int_{-2}^{2} (2x^3 - x^2 + 3x) \, dx \]

2) Find the area between the curves \( y = x^2, \ y = 2 - x \), on the interval \([-2, 2]\).

3) Find the area bounded by the curves \( y = x^2, \ y = x + 2 \).

4) Find the area bounded by the curves \( y = x + 1, \ y = x^3 + 3x^2 + 3x + 1 \).

1) Let \( y = x^2 - \frac{1}{8} \ln x, \ 1 \leq x \leq 2 \). Find the length.

5) Let \( y = \ln(\cos x), \ 0 \leq x \leq \frac{\pi}{4} \). Find the length.

1) (30 points) A volume lies above the region in the \( xy \)-plane bounded by the curves
\( y = x^2, \ y = 2 - x^2 \). Each \( x \)-section is a triangle, with height half the base. Each base lies inside the region, and it touches the curves \( y = x^2, \ y = 2 - x^2 \). Use the method of \( x \)-sections to find the volume. a) Sketch the region in the plane.

b) Find the limits for \( x \).

c) Find \( A(x) \).

d) Compute the volume \( V \).

3) (25 points) Use the method of \( x \)-sections to find the volume inside the hyperboloid, for \(-1 \leq x \leq 1\)

\[ \frac{y^2}{9} + \frac{z^2}{9} - x^2 = 1 \]

a) Give a formula for \( A(x) \).

b) Find the the volume.

**Final Info**

Saturday May 18 2-3pm GDC 2.216