Problem 1
Evaluate the following indefinite integrals (remember, this means to find an antiderivative):

\[ \int 3x^3 + 2x + \pi dx \]
\[ \int \frac{1 + \sqrt{x}}{\sqrt{x}} dx \quad \text{hint: do some algebra first} \]
\[ \int 2\cos(2x)dx \]

Problem 2
Evaluate the following definite integrals:

\[ \int_0^1 x^3 + 2dx \]
\[ \int_{-2}^2 x^5dx \quad \text{note: why are we expecting to get 0?} \]

Problem 3
Find the area between the given function and the x-axis on the given interval.

\[ f(x) = x^2 - 1 \quad \text{on } [0, 3] \]
\[ f(x) = \sin(x) \quad \text{on } [0, 2\pi], \quad \text{hint: } \sin(x) \leq 0 \text{ on } [\pi, 2\pi] \]

Problem 4
Find the area between the given curves on the the interval \([-1, 1]\)

\[ f(x) = x^2 \quad g(x) = x \]
\[ f(x) = x^3 \quad g(x) = x \]