1 (35 pts.) Evaluate the following integrals:

(a) \( \int_{-1}^{1} (x^2 + |x|) \, dx \).

(b) \( \int x \sqrt{x^2 + 1} \, dx \).

(c) \( \int x^2 \sqrt{x + 1} \, dx \).

(d) \( \int_{0}^{1} \frac{6x^2}{1+x^6} \, dx \).

2 (10 pts.) Evaluate \( \sum_{k=10}^{30} k \).

3 (15 pts.) If \( f \) is continuous and \( \int_{0}^{9} f(x) \, dx = 5 \), then what is \( \int_{0}^{3} f(x^2) \, x \, dx \)?

4 (20 pts.) Find the area of the region enclosed by the curves \( x - y^3 = 0 \) and \( x - y = 0 \).

5 (20 pts.) A solid is obtained by revolving the region bounded by \( y = \sec x, y = \tan x, x = 0, x = 1 \) about the \( x \)-axis. What is its volume?