1. (8 pts) Evaluate the integral by interpreting it in terms of areas.

$$(a) \int_{-1}^{1} 2|x|dx \qquad\qquad (b) \int_{0}^{2} \left(\sqrt{4-x^2}+2\right)dx$$

2. (8 pts) Evaluate the integral.

$$(a) \int_{0}^{1} 6x(1+x^2)dx \qquad\qquad (b) \int_{1}^{4} \frac{\sqrt{x}-4}{x^2}dx$$

3. A particle moves along a straight line so that its velocity at time t is $v(t) = 2\cos t - 1$.

(a) (4 pts) Find the displacement of the particle during the time period $0 \le t \le \pi$.

(b) (Bonus, 2 pts) Find the distance traveled during the same time period.