

## Approximating the Area Under a Curve- HW Problems

1. Approximate the area under the graph of  $f(x) = \sin(x)$  from  $x = 0$  to  $x = \pi$  using
  - a. Right endpoints and  $n = 4$
  - b. Right endpoints and  $n = 8$
  - c. Left endpoints and  $n = 4$
  - d. Left endpoints and  $n = 8$ .
  
2. Approximate the area under the graph of  $f(x) = 4 - x^2$  from  $x = -2$  to  $x = 2$  using  $n = 4$  and
  - a. Left endpoints
  - b. Midpoints
  - c. Right endpoints.
  
3. Approximate the area under the graph of  $f(x) = \sqrt{x}$  from  $x = 1$  to  $x = 4$  using  $n = 3$  and
  - a. Left endpoints
  - b. Midpoints
  - c. Right endpoints.

4. Approximate the area under the graph of the following functions from  $x = 0$  to  $x = 2$  and  $n = 50$  (use the summation formulas developed in class)

a.  $f(x) = 2 + x^2$ ; using right endpoints

b.  $g(x) = 4x^3$ ; using left endpoints.