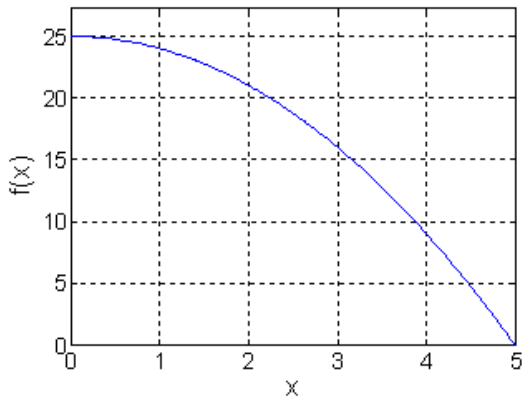


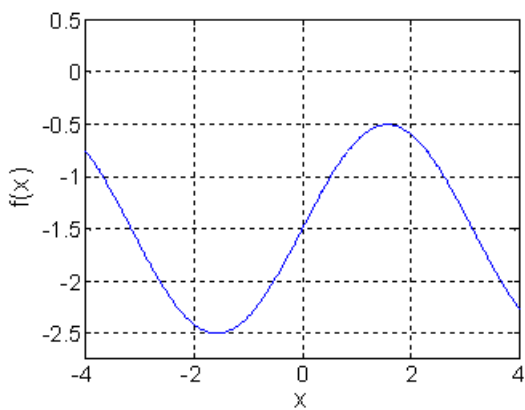
# Classroom Voting Questions: Calculus II

## Section 5.2 The Definite Integral

1. Which of the following is the best estimate of  $\int_0^3 f(x)dx$ , where  $f(x)$  is given in the figure below?



- (a) 13  
(b) 17  
(c) 65  
(d) 85
2. Which of the following is the best estimate of  $\int_{-2}^2 f(x)dx$ , where  $f(x)$  is given in the figure below?



- (a) -4  
(b) -6

- (c) 3
- (d) 6
- (e) 12

3. Make a sketch of the function  $f(x) = \cos x$  and decide whether  $\int_{-1.5}^0 f(x)dx$  is:

- (a) Positive
- (b) Negative
- (c) Zero

4. Make a sketch of the function  $f(x) = -x^3$  and decide whether  $\int_{-5}^5 f(x)dx$  is:

- (a) Positive
- (b) Negative
- (c) Zero

5. **True or False:** If a piece of string has been chopped into  $n$  small pieces and the  $i^{\text{th}}$  piece is  $\Delta x_i$  inches long, then the total length of the string is exactly  $\sum_{i=1}^n \Delta x_i$ .

- (a) True, and I am very confident
- (b) True, but I am not very confident
- (c) False, but I am not very confident
- (d) False, and I am very confident

6. You want to estimate the area underneath the graph of a positive function by using four rectangles of equal width. The rectangles that must give the best estimate of this area are those with height obtained from the:

- (a) Left endpoints
- (b) Midpoints
- (c) Right endpoints
- (d) Not enough information

7. Suppose you are slicing an 11-inch long carrot REALLY thin from the greens end to the tip of the root. If each slice has a circular cross section  $f(x) = \pi[r(x)]^2$  for each  $x$  between 0 and 11, and we make our cuts at  $x_1, x_2, x_3, \dots, x_n$  then a good approximation for the volume of the carrot is

- (a)  $\sum_{i=1}^n f(x_i)x_i$
- (b)  $\sum_{i=1}^n [f(x_{i+1}) - f(x_i)]x_i$
- (c)  $\sum_{i=1}^n f(x_i)[x_{i+1} - x_i]$
- (d) None of the above.

8. Let  $f$  be a continuous function on the interval  $[a, b]$ .

**True or False:**  $\lim_{n \rightarrow \infty} \sum_{i=1}^n f(x_i^*)\Delta x_i$  may lead to different limits if we choose the  $x_i^*$  to be the left-endpoints instead of midpoints.

- (a) True, and I am very confident
- (b) True, but I am not very confident
- (c) False, but I am not very confident
- (d) False, and I am very confident