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?



- (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?



- (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^{th} piece is Δx_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 $x_1, x_2, x_3, \ldots, x_n$ 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: $\lim_{n\to\infty} \sum_{i=1}^{n} f(x_i^*) \Delta x_i$ 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