

Name: _____
Student ID: _____

Quiz 3

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. (5 marks) §5.1 #3a Estimate the area under the graph of $f(x) = \cos x$ from $x = 0$ to $x = \frac{\pi}{2}$ using four approximating rectangles and left endpoints. Sketch the graph and the rectangles. Is your estimate an underestimate or an overestimate?

Question 2. (1 mark) §5.2 #16 Express the limit as a definite integral on the given interval

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{\cos x_i}{x_i} \Delta x, \quad [\pi, 2\pi]$$

Question 3. (1 mark) §5.2 #37 Evaluate $\int_{\pi}^{\pi} \sin^2 x \cos^4 x \, dx$.

Question 4. (3 marks) §5.2 #40 If $\int_1^5 f(x) \, dx = 12$ and $\int_4^5 f(x) \, dx = 3.6$, find $\int_1^4 f(x) \, dx$.