# Practice Test 1 – SOLUTIONS

Last modified: Sunday Jan 25, 2026 (Q8 graph)

**Question 0:** Consider the integral $\displaystyle\int_2^7 \sin(x)dx = \lim_{n\to\infty}\sum_{i=1}^{n}\left(\frac{5}{n}\right)\sin\left(2+\frac{5i}{n}\right)$

The $x$-value of the point where we take the height of each rectangle is given by $2 + (5i/n)$. Explain in words what each part 2, 5, $i$, $n$ and the overall expression represents on the $x$-axis.

Solution: $n$ is the number of rectangles being used to approximate the net area between the graph of $y = \sin(x)$, the $x$-axis, $x = 2$ and $x = 7$. The index $i$ tells us which rectangle we are currently looking at. For example, $i = 1$ at the first rectangle, $i = 2$ at the second rectangle, etc. The number 2 is the $x$-value of the left endpoint of the area under consideration. The number 5 is the total distance along the $x$-axis from the left side to the right side of this area.