Quiz #9

Student Name: Student ID:

1. Evaluate the integral of the following tabular data with
(a) The trapezoidal rule
(b) Simpson's rules

x	0	0.1	0.2	0.3	0.4	0.5
$f(x)$	1	8	4	3.5	5	1

2. Use Romberg integration to evaluate

$$I = \int_1^2 \left(2x + \frac{3}{x}\right)^2 dx$$

to an accuracy of $\varepsilon_s = 0.5\%$

3. Use Richardson extrapolation to estimate the first derivative of $y = \cos(x)$ at $x = \pi/4$ using step sizes of $h_1 = \pi/3$ and $h_2 = \pi/6$. Employ centered differences of $O(h_2)$ for the initial estimates