

Name:

Student ID:

Q1) Let

$$\int_2^4 \left[x + f\left(\frac{x}{2}\right) \right] dx = 12.$$

Find $\int_1^2 f(x) dx$.

Q2) Find $b > 2$ so that the average value of the function $f(x) = 2x - 2$ on the interval $[2, b]$ is equal to 4.

Q3) Evaluate

$$I = \int \sin^2 x \cos x \, dx$$

Q4) Evaluate

$$I = \int x (x + 5)^{2015} \, dx$$

Q5) Let f be a continuous function such that

$$\int_0^{2x} e^{\frac{t}{2}} f(t) \, dt = e^x \sqrt{x+3}.$$

Find $f(2)$.