Summer Term I — MA124 Calculus II
Kostadinov — Boston University

Quiz No.7

student:

Problem 1: Evaluate the definite integral

$$\int_0^{\pi/4} \cos(2x)\,dx$$

Problem 2: Evaluate the indefinite integral using integration by parts:

$$\int x\sin(x)\,dx$$

Problem 3: Evaluate the indefinite integral ($n \neq -1$)

$$\int y^n\,dy$$

Problem 4: Evaluate the definite integral

$$\int_1^2 x^3 + \frac{1}{x}\,dx$$

Problem 5: In the following sentences cross out the WRONG word:
The integral $\int_0^\infty x\,dx$ is proper. improper.
The integral $\int_2^4 (x-3)^2\,dx$ is proper. improper.
The integral $\int_0^\infty \frac{1}{x}\,dx$ is improper and convergent. divergent.
The integral $\int_0^\infty \frac{1}{x^2}\,dx$ is improper and convergent. divergent.

Problem 6: Write out the partial fractions expansion of the function

$$\frac{10}{2x^2+3x-2}$$

Problem 7: Write out the partial fractions expansion of the function

$$\frac{10}{(x^2+9)(x-1)}$$

Problem 8: Evaluate the indefinite integral:

$$\int \frac{10}{(x^2+9)(x-1)}\,dx$$

Problem 9: Evaluate the indefinite integral:

$$\int \frac{10}{2x^2+3x-2}\,dx$$

Problem 10: Use Simpson's rule to approximate the given integral:

$$\int_1^3 2^x\,dx$$