NAME: ————————————————

ID#: ————————————————

PRACTICE MIDTERM EXAM 2

INSTRUCTIONS: *You have exactly* 50 *minutes to complete the exam. You must show all your work in order to receive full credit. No calculators are allowed. You must obey the principles of academic integrity. You must include this sheet with your exam in order to receive a grade.*

1. Evaluate the double integral

$$\iint_S (x-y)^2 \sin^2(x+y) \; dxdy$$

where S is the parallelogram with vertices $(\pi, 0)$, $(2\pi, \pi)$, $(\pi, 2\pi)$, and $(0, \pi)$.

2. Find the volume of the solid bounded by the sphere $x^2 + y^2 + z^2 = 5$ and by the paraboloid $x^2 + y^2 = 4z$.

3. Evaluate the line integral

$$\int_C (y-z) \; dx + (z-x) \; dy + (x-y) \; dz,$$

where C is the intersection of the cylinder $x^2 + y^2 = a^2$ and the plane $x/a + z/b = 1$, $a > 0$, $b > 0$.