Math 231. Quiz 2. Individual part. Name:_____

- **Work individually on this part.** There are three questions on two sides of the page.
- Show all work.
- No notes, calculators or electronic devices of any kind.
- You have 20 minutes to complete this part.

1. (2 points, approximate integration)

Let $I = \int_0^3 x^2\,dx$.

Without doing any calculations, rank the following values from smallest to largest: $R_4(I), L_4(I), T_4(I), I$

____ < ____ < ____ < ____

2. (4 points) Set up (but do not evaluate) a **dy**-integral to compute the surface area of the surface obtained by rotating the curve $y = x^2$ from $(0, 0)$ to $(2, 4)$ about the line $y = 5$.

3. (4 points)

Find the center of mass of the region bounded by $x = 1, x = 2, y = x^3$, and $y = -x^3$.